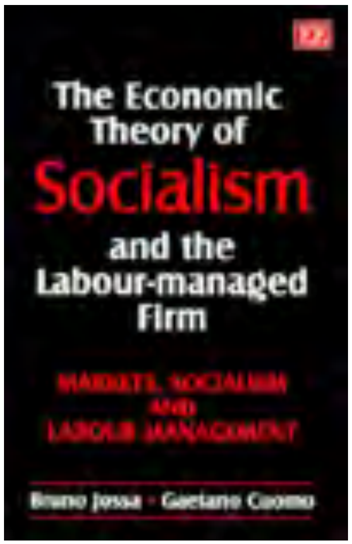

The Economic Theory of Socialism and the Labour-managed Firm

Markets, Socialism and Labour Management

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Preface

The unexpected and indeed rapid fall of the Soviet system in 1989 is continually taken to mark the end of the communist utopia and at times is even considered as the deathblow to every possible blueprint for a true form of socialism. But, regardless of how we define it, what did collapse was a system which was not only totally illiberal and oppressive, but also thoroughly irrational, as it defied being properly defined or satisfactorily analysed by experts. Thus it was pigeon-holed under the term 'Command Economy'. But what logic actually lay behind the commands of the planners for the Eastern bloc countries? The term 'transition economy toward communism' was also bandied about, but as time went on it was pronounced with less and less conviction. The seventy-odd years that this system managed to last certainly did not either see or represent any progress towards achieving a form of communism which was truly worthy of the term.

The rationality of a socialist economy was widely debated in the 1920s and 1930s. Indeed some of the most outstanding economists of the time dealt extensively with the issue of economic calculation in 'collectivist' economies and this may in fact help shed light on the reasons why the Soviet system collapsed. In later years the question was raised again, re-examined and given various new interpretations, although it cannot be said that any clear-cut conclusion was ever reached. More recently, the main considerations on socialism and state intervention professed by economists have veered off along quite different tangents.

However, there is reason to believe that the debate on economic calculation in socialism and the latest thoughts of economists on the issue, along with the 'confirmation' that the collapsed Soviet system is proof of the theoreticians' arguments, have been useful in clarifying what true socialism is in terms of economic theory. This book aims to illustrate this and is based first and foremost on the thesis, which no longer raises any eyebrows, that the only thoroughly rational form of socialism is market socialism.

Hence this is a book on market socialism and the relevant debate among economic theorists. Although it is mainly intended for a public of professional economists, and not for a general readership, its limited use of technical terms and straightforward style should not discourage non-economists or, at least, readers with only a basic knowledge of economic science. However, as it is primarily addressed to economists, it offers logical arguments rather than indulging in impassioned discussions. Nevertheless it is a book about an important political issue and its propositions are likely to arouse fierce opposition. As has been rightly observed, the simplest though not always the safest way of discovering the weaknesses of a writer's thought is to focus on his/her declared intentions and political creed, since this may help us understand exactly how he/she is likely to misrepresent reality (see, for example, Kukathas, 1989, p. 4; Sylos Labini, 1991, p. 10 and 1995, p. 34). And there are two easily identifiable intentions in this book: first, to show that market socialism is the only rational form of socialism; second, to argue that market socialism with labour-managed firms is by far the best form of market socialism.

The great liberal economist and Nobel prize winner Friedrich Hayek wrote: 'the differences between socialists and non socialists ultimately rest on purely intellectual issues capable of a scientific resolution and not on different judgements of value' (Hayek, 1973a, p. 6). 'Socialism', he likewise claimed,

> is not based merely on a different system of ultimate values from that of liberalism, which one would have to respect even if one disagreed; it is based on an intellectual error which makes its adherents blind to its consequences. This must be plainly said because the emphasis on the alleged difference of the ultimate values has become the common excuse of the socialists for shirking the real intellectual issue. (Hayek, 1976b, p. 136; but also Hayek, 1949, p. 194 and 1976a, pp. 295–86 and 304–5)

Other writers have rightly stressed that while Hayek doubtlessly sees ideas as being the motive force behind history, his peculiar line of reasoning allows detrimental ideas to determine the tragic effect of prioritizing privileged interests over the common interest (see Boettke, 1995, p. 9); and in Hayek's view the most detrimental and devastating ideas are undoubtedly those of socialism (see, for example, Hayek, 1944, p. 5).

The prime aim of this book, however, is to show that there is not necessarily an intellectual error behind market socialism and that the proposal of market socialism with labour management is also interesting because it offers a solution to the errors that liberal socialists had long since identified in the form of socialism as implemented in communist regimes.

Today, few economists, political theorists and sociologists (including Jaroslav Vanek and the Nobel prize winner James Meade) are concerned with labour management, while none of the major political parties are planning to bring about a true form of market socialism with labour-managed firms. This strikes us as all the more surprising (and will be discussed in detail later on) since a labour-managed economy is a much more democratic social order than capitalism and is not open to any serious objections. To argue that a labour-managed economy would represent no appreciable advancement over capitalism because it is being proposed as a true market system would certainly be a mistake, since its greatest merit is anything but negligible: by doing away with the distinction between employers and employees, it would mark an achievement on a par with the conquest of universal suffrage, because it would supplement political democracy with economic democracy (see Dahl, 1985). Yet an examination of the reasons behind the present scant interest in labour management lies outside the scope of this book, which is primarily concerned with analysing and, possibly, confuting the objections raised so far against the proposal of having firms managed by workers.

Let us point out again that this book is based on two closely interconnected assumptions: (a) that market socialism is the only rational form of socialism, and (b) that the labour-managed economy is by far the best form of socialism. One basic idea runs through the whole book, that is, the contention that, if the motive force of a labour-managed economy is to grant people control over economic activity, far from conflicting with the principles of liberalism, it is to be viewed as the only true realization of the principles of freedom and democracy. Labour management reconciles socialism and liberalism without aiming at a compromise solution between the two, because by its very nature it is the fullest attainment of democracy (on the issue of whether and to what extent liberalism and democracy are in conflict see, for example, Wallerstein, 1994). And according to Ellerman the argument for placing democratic control in the hands of workers is based both on the theory of democracy and on the theory of ownership (Ellerman, 1992, p. 17).

Besides bringing about liberalism and socialism in principle, however, labour management also realizes in full the Christian ideal of solidarity. In a celebrated passage in his *Centesimus Annus* on the economic and civic advancement of peoples, Pope John Paul II recommends as the ideal an economic system which acknowledges the basic and positive role of firms, markets, private ownership and the consequential control of capital goods (see *Centesimus Annus*, 1991, para. 42); and labour management is in fact a true 'market economy', a system based on firms, markets and workers' control of production means. Moreover, labour management is by its very nature a system in which the private profit motive is replaced by the principle of maximizing corporate income; and this, as will be shown in detail in Chapter 13, is a principle conducive to greater solidarity. In other words, in a labour-managed system the Christian ideal of solidarity is not merely recommended as an ideal to be pursued (as in the present-day proposal for a 'Christian capitalism' (see Neuhaus, 1992 and Novak, 1993), but actually integrated into the basic operating principle of an economy with cooperative firms.

In an article on capitalism, Frank Hahn, an outstanding orthodox economist, recently wrote: 'At this particular moment, the system triumphs and any conceivable changes do not appear to threaten it seriously. My personal opinion is that this stage will be a comparatively short one' (Hahn, 1993a, p. 11). According to all those who believe that labour management would finally bring about full democracy and greater social justice, Hahn's opinion encourages the hope that the democratic revolution we are talking about will come about relatively soon. In Tönnies's view major processes of cultural growth are characterized by the juxtaposition of two eras, in so far as a 'community' era is followed by an era of 'societies' (see Tönnies, 1935a). The 'ideal type' of the era of *societies* is obviously capitalism, while a labour-managed economy is a system based on *communities*; and although Tönnies strives to use a non-evaluative tone, he clearly reveals his strong preference for communities and describes the period in which he lived as a crisis of capitalist and industrial society, in which the need to supplement the structures of this society with new community forms is deeply felt (see Treves, 1963, p. xviii). If Tönnies is right, his celebrated dichotomy – the most famous of all sociological dichotomies (Bobbio, 1970, pp. 138–9) – offers a strong argument in support of the contention that labour management can be proposed as an alternative system to capitalism, capable of bringing about the required reorganization of society by introducing new modes of community living.[1]

In the face of the complex issues which are sure to arise when discussing 'market socialism' or 'socialism with labour management', this book sets out to analyse only some of the purely economic issues that Western economists have been addressing most frequently over the past seventy years. A small part of the book is the re-edition of a study completed in 1978 and entitled *Socialism and Markets* (published in Italian as Jossa, 1978), but to a greater extent it is a new work. The contents of the previous book have been thoroughly revised and condensed into the first three chapters with major additions. On the whole, the rest of the volume contains new material and some partially re-elaborated material already published in journals and books of articles by various writers. Chapters 8, 9 and 10 are the work of Gaetano Cuomo, who also collaborated in parts of Chapter 11.

While preparing the final draft of this book, my thoughts went to the many occasions when I discussed market socialism and labour management with colleagues and students in meetings and seminars over the past twenty years. As I cannot possibly mention them one by one, I would like to thank all those whose valuable suggestions helped the slow process of putting this book together. A heart felt thank you to Mrs Ambrosio for her precise and careful editing work.

B.J.

NOTE

1. According to Dahrendorf, the present-day 'globalization' of economic activity and the marked emphasis on individualism it involves are already generating a wave of strong opposition which is striving to achieve 'communitarianism' in a variety of ways (see Dahrendorf, 1995, Chapter 3).

Introduction: labour management and socialism

> Every novelty stems from the elimination of the commonplaces to which we were accustomed and which appeared to us to be reality itself. (Marcel Proust)

1. THE IDEA OF LABOUR MANAGEMENT

The idea that firms can be labour managed (that is, run by the workers employed in it) and the idea that a self-managed economic order may result in new forms of political democracy may be traced back to the time of what is called 'guild socialism' or to early forms of anarchic trade unionism. Moreover, some of the main economic thinkers of the nineteenth and early twentieth centuries – Mill, Marx, Marshall, Walras and Wicksell – did address and endorse the possibility that firms should be labour managed. Nevertheless, a true economic theory of labour management is a recent achievement and was developed mainly by Ward, Vanek and Meade starting from 1958 (Ward, 1958; Vanek, 1975a and 1975b; and Meade, 1972 and 1979). We will have to bear this in mind in the course of this book, since the idea of having firms democratically managed is particularly interesting today because of the novelty of the analyses in which it has recently been discussed.

Given the novelty of these analyses, what strikes us as surprising is, on the one hand, that little attention has been given to Ward's and Vanek's theories and, on the other, that recent analyses on the subject contain relatively few objections against labour management. Such criticisms as have been raised mainly concern two issues which, though important, are far from decisive: the supposedly anomalous slope of the firm supply curve and what is known as 'underinvestment'. In due course, however, both of these objections have been largely refuted.

As we proceed, we will not assume that the reader is familiar with the basic ideas of the economic theory of labour management; consequently it will be convenient to provide some preliminary information on the main organizational lines of a labour-managed economy:

a. a labour-managed economy is a *market* system in which consumers and producers are free to make their choices with only one, serious limitation: *the ban on hiring employees*;
b. firms are managed by workers, who *elect* their managers from among themselves and from external subjects;
c. in the form of labour management which will be the main focal point of our discussion firms are exclusively financed using *loan* capital;
d. the proceeds of a firm's sales are first used to pay interest on this loan capital and then divided among all the workers of the firm *according to pre-fixed percentage shares*;
e. private individuals are free to save and invest as they like;
f. firms invest their income in keeping with strict private profit criteria;
g. it is possible in theory, though improbable in practice, that firms will lay off any excess workers employed in them.[1]

Keeping in mind the above-mentioned characteristics of the labour-managed firm, the first point to be clarified here is what links there are between labour management and socialism.

In our opinion, labour management and socialism are so closely linked that in discussing the former one must necessarily begin by analysing its relations with the latter. As is well known, socialism has traditionally been equated with the public ownership of production means. Nevertheless, until recently the prevailing opinion was that these publicly-owned production means were to be used in managing the economy according to non-market criteria: that is, in such a way as to allocate resources, not in keeping with private utility criteria, but in accordance with the commands of the planner (that is, based on 'bureaucratic criteria') (see, among others, mainly Taylor, 1929, p. 43; Hayek, 1940, p. 134; and Dickinson, 1939, pp. 10–11). That is why past and present advocates of this view have always made it clear that a more complete definition of socialism would have to focus on a second main characteristic, in addition to the public ownership of production means: the fact that resources are allocated based on plans (public decisions on what to produce and how to produce it), that is, commands by which firms are instructed to carry out what others have decided.[2]

Today this narrower definition of socialism sounds barely convincing, because the collapse of the Soviet system has highlighted the fact that any social order aiming to substitute planning for the market, especially a democratic one, has no long-term survival prospects. Therefore, granting that the great error in command economy is the *substitution* of planning for markets, it will still be possible to define socialism as an economic and social order in which the means of production are taken away from private owners; but it will be worth emphasizing that a socialist order must allocate resources by calculating

their minimum cost to families and firms and limiting public control over the economy.

But what are the points that labour management and socialism have in common?

As mentioned before, the economic theory of labour management has highlighted the notion that labour-managed firms must always be exclusively funded with loan capital for a number of reasons. We want to emphasize here that this does not exclude the hypothesis of self-financing; what it does exclude is merely the claim by providers of funds to be considered as the owners of firms and to be entitled to manage them.

Therefore, if capitalism is the economic and social order in which the *private owners of production means*:

a. can freely dispose of the assets of the firm and make all the important decisions concerning it;
b. can hire workers, pay them fixed wages and salaries; and
c. can appropriate any surplus that is earned;[3]

then a labour-managed economy can be defined as the economic and social order in which the *workers* of a firm, who are *not* the private owners of its capital goods:

a. can freely dispose of the firm's assets and manage its business without special limitations;
b. can borrow ('assume') capital and pay fixed interest thereon; and
c. can appropriate any surplus that is earned.

It follows, therefore, that labour management is tantamount to a truly socialist revolution,[4] because labour takes the place of capital or, more precisely, because the capital–labour relation and all the relations between production factors are reversed, with workers taking over the role that capitalists play in capitalism and vice versa.

It goes without saying that those who contend that the capitalistic relationship between production factors entails exploitation may further develop upon the above description of this revolution and reach the conclusion that by reversing the capital–labour relation labour management will rule out capitalist exploitation altogether.

If this is true, it includes the serious implication that socialism has little to do with the choice between plan and market. If socialism is to be a rational social order, it must be founded on *the market*. In other words, the enemy which socialists have to defeat is the enslavement of man to material objects, of workers to capital, not the market. Once labour, today's 'Prometheus in chains', is freed, the market will become (in line with its very nature) the arena in which choices are made, the place where preferences are freely expressed.

2. HOW THE BOOK IS ORGANIZED

This book intends to examine labour management as being the point where all the discussions on market socialism lead to. These discussions stemmed from the debate on economic calculation in a socialist economy which has continued to this very day and will therefore be dealt with in the first part of this book.

With this aim in mind, the four opening chapters will re-examine and rediscuss in detail the great debate which Mises started in 1920 (Mises, 1921). This debate was most popular during the 1930s and was temporarily brought to a close with an important article by Hayek (Hayek, 1940), but in later years it managed to kindle further controversy (see, above all, Bergson, 1948; Ward, 1967; Vaughn, 1980; and Lavoie, 1985).[5] Its importance cannot be underestimated and, as the issues raised remained unresolved (even after its conclusion) and are still among the most controversial in economic theory today, any attempt at identifying differences of view between the parties involved is definitely more than a mere exercise in historical reconstruction (see Vaughn, 1980, p. 535). Several authors have recently argued that the terms of the debate were thoroughly misunderstood or, at best, misinterpreted (see Lavoie, 1985 and Ioannides, 1992, Chapter 11), and as we, too, share this view, we intend to discuss it in full in Chapters 1–4.

Unlike Lavoie and Ioannides, however, we doubt that the terms of that debate were misinterpreted only because the contributions of the Austrian school of economists were misunderstood or not given full consideration. Consequently in what follows we will adopt a different approach: in our opinion, the implications of that debate clearly suggested that a well-organized socialist order was to be a form of socialism with autonomous firms (in which the state was to fix pay levels or the pay structure and the extent and regional distribution of investment, besides redressing other macroeconomic imbalances); and the main reason why those contributions were misinterpreted lies in the scant interest, if not straightforward aversion, that this form of economic organization has aroused to this day and, conversely, the great attention constantly given to centralized planning until recently.

In other words, let us say that the question of whether it was the socialists (as Lange maintained) or their liberalist critics (as Hayek and Machlup argued) that were the winners in the debate of the 1930s has remained controversial to this day. Our contention, however strange it may seem, is that the debate has never been settled because socialists have failed to take the necessary final and decisive step: they have never admitted that resources can be rationally allocated only if firms are autonomous.

As soon as this last step is taken, the socialist proposal of nationalizing production means will no longer be open to the strictures either of Hayek or of other liberalist thinkers who adopted the views of this great Austrian economist and further elaborated on his work. And this involves a different approach to the interpretation of both the debate of the 1930s and its conclusion. This aspect of the debate will be dealt with in Chapter 4.

Next we will have to define the nature of socialism and the differences between socialism and capitalism. One possible contention here is that to argue that the social order known as market socialism differs from capitalism only in some aspects is indeed an understatement, because in its most interesting organizational form market socialism actually goes as far as to reverse the capital–labour relation altogether. This will be fully dealt with in Chapter 5.

Chapter 6 is concerned with income distribution under socialism. One of the greatest historians of socialism has defined socialism as 'a system of communal (or social) ownership of the means of production, established for the purpose of making (or keeping) the distribution of income, wealth, opportunity, and economic power as nearly equal as possible' (Landauer, 1959, p. 51); and for those who accept this definition, there can be no doubt that the strongest argument for market socialism in all its organizational forms is that, unlike capitalism, it allows income to be distributed in the best possible way according to social conscience.

It is worth repeating that the prime aim of the first part of this book is to show that (according to the defenders of socialist ideals) market socialism stems from the need to refute the well-known criticisms of Mises and Hayek; the first six chapters, however, are also intended to show that a form of market socialism in which firms are autonomous and are managed by workers is the natural conclusion of the debate of the 1930s on economic calculation in a socialist economy.

Chapter 7 contains an introduction to the theory of labour management and discusses general subjects, such as the overall principles of behaviour in labour-managed firms, the separation of ownership from control, and the contention that labour management marks the end of exploitation.

Chapter 8 deals with short-term equilibrium in labour-managed firms and discusses the 'perverse' result pointed out by Ward, that is, the *reverse* relation between supply of goods and prices. In Chapter 9, this 'perverse' result is further analysed in the light of the extensive literature on the subject, so that it can be seen in its true perspective.

Chapter 10 addresses 'underinvestment', a subject which has also been extensively discussed in the literature. Here the main conclusion is that underinvestment is not inevitable in the most interesting type of labour-managed firm, that is, the externally financed firm.

Chapter 11 offers a detailed analysis of ownership rights in the labour-managed firm; carrying on the line of reasoning adopted in the first six chapters, it shows that the externally financed firm is, by its very nature, a firm whose assets are the property of the state.

Chapter 12 deals extensively with the third of the serious criticisms raised against the labour-managed firm: the contention that control (or monitoring) is poor in this kind of firm, if not altogether absent. This criticism, which in our opinion is unfounded, was first voiced in an article by Alchian and Demsetz as early as 1972 (Alchian and Demsetz, 1972), but has never been fully analysed ever since.

Chapter 13 addresses an idea which regularly surfaced in the writings of classical economists such as Adam Smith and John Stuart Mill and even in Alfred Marshall: the notion that a person's job and his/her working environment both influence his/her character to a large extent. The interest of this contention lies in the fact that those who endorse it argue that the structure of the production process in the labour-managed firm might make people less selfish and self-centred than they normally are in capitalism.

In conclusion, this book makes no claim to be an exhaustive study of market socialism and labour management, because it fails to address a large number of economic and political issues likely to arise in a labour-managed economic system. Although Ward's 1958 analysis inspired a substantial body of theoretical thinking, as of today the economics of labour-managed firms has not progressed much further than did either Vanek in his excellent 1970 book on the subject (Vanek, 1970) or Ireland and Law in a well-known 1982 study (Ireland and Law, 1982).[6] As mentioned above, this book only intends to focus on the major issues that were discussed during the great debate on market socialism and the fact that it is not as exhaustive as it should be is due not only to the present state of research on the subject, but also to our personal interests in the field. None the less the authors hope that readers will be made aware that socialism with labour-managed firms, though still comparatively little known, is a form of social organization which could be introduced into more advanced capitalist countries right from today[7] and which deserves the attention of mainstream theorists in economic theory.[8]

NOTES

1. On the institutional rules of an economic system with labour-managed firms, see, for example, Putterman (1993b).
2. According to some, the celebrated socialist calculation debate of the 1930s led to a new definition (by Mises and Hayek) which equated socialism with centralized planning (see, *inter alia*, Hayek, 1933, pp. 121 ff., and Streissler, 1994, p. 49).
3. The definitions of capitalism and socialism will be discussed in detail in Chapter 5. Nevertheless it is worth mentioning here that the term 'capitalism' was coined long after the establishment of market economy. According to Braudel (1977, pp. 52–3) this term came into general use only in the twentieth century and was probably circulated as a result of the publication of Sombart's well-known study *Der moderne Kapitalismus* (1924).
4. See, *inter alia* and most importantly, Kornai's explicit contention that labour management is a truly socialist form of management and can lead to a different interpretation of the concept of public ownership (Kornai, 1992, p. 461).
5. As has been rightly observed, however, these contributions were almost totally ignored in the literature on economic reform in Eastern European countries (Temkin, 1989, p. 197), even though much of what was written by the participants in that debate in the 1930s was then apprehended by experience and concretely observed by some economic reformers in all socialist countries (Temkin, 1989, p. 217).
6. Comparatively recent reviews of theoretical and/or empirical studies on the subject are found in Bonin and Putterman (1987) and Bonin, Jones and Putterman (1993).
7. Writing in 1989, Elster and Moene observed that up to their time the economic theory of the cooperative firm had not progressed to the point of offering any robust conclusions on the long-term viability of a system of cooperatives (see Elster and Moene, 1989b, pp. 12–13; also see, for example, Drèze, 1985, pp. 16–19). According to us today this is not true.
8. In the words of Giorgio Fuà: 'We ought to establish the extent to which a system in which workers share profits and contribute to the management of firms is practicable and the advantages it would offer not only in terms of employment and wage levels (advantages sufficiently emphasized by economists such as Weitzman), but also in terms of the effects that work would have on social integration and self-realization' (Fuà, 1994, p. 765).

1. Economic calculation in socialism: early contributions

> It is obvious how fantastic those doctrines are which imagine that production in the collectivist regime would be ordered in a manner substantially different from that of 'anarchist' production. (Barone, 1908)

1.1 INTRODUCTION

Ever since the Russian revolution in the 1920s, economists have been eagerly debating whether economic calculation (the calculation of the minimum production cost of goods) is rationally possible in a socialist order. In all probability that debate, which is still topical today, addressed the most important issue ever raised by economists with regard to socialism, although it remained almost entirely confined to non-Marxist spheres. It first began when the Austrian economist Mises published his famous article (Mises, 1921; also see Mises, 1932 and 1951) in which he argued that an economic system with state-owned production means (or 'capital goods') was prevented from determining the value of such assets and, consequently, also from calculating the production costs of consumer goods. Mises' 'challenge' was promptly taken up by a number of socialist economists who endeavoured to show, without recourse to the categories of Marxist economics, that the considerations that had induced Mises to launch the debate were precisely those on which they based their assertion of the superiority of socialist over capitalist economics.[1]

In this chapter the main points of that debate will be expounded with suitable observations and comments, while in the following chapters the ideas prompted by those contributions will be reviewed in the light of more recent discussions.[2]

1.2 MISES' CRITICISMS OF COMMAND ECONOMY

The main points of Mises' criticisms that started the debate can be summed up as follows.[3] In every economic order resources are scarce and must consequently be used in a rational manner; in order to use resources rationally, however, one needs 'scarcity indexes' capable of measuring the degree of scarcity of each single resource and, hence, its greater or lesser importance for the community. As these 'scarcity indexes' represent the prices of commodities, value calculations, that is, calculations based on market prices, are crucial to economics and are the only means that can bring about a rational distribution of resources among a wide spectrum of alternative end uses.

Mises' contention was that both the market itself and its role in determining prices were inseparable from the manner in which a society with privately-owned production means is found to work. In a socialist order, therefore, 'just because no production good will ever become the object of exchange, it will be impossible to determine its monetary value' (Mises, 1921, p. 92). But if the value of capital goods is not determined then there is no way of calculating production costs or deciding what commodities can be rationally produced. It follows, therefore, that production would not be based on the principle of minimum cost. Determining the prices of consumption goods is only one of the two prerequisites of economic calculation (Mises, 1921, pp. 100–105); the second is the pricing of capital goods, which would become impossible in the absence of markets for these goods.

In other words, in a socialist order economic calculation becomes impossible because of the abandonment of the principle – which is vital to a suitable allocation of resources – that exchanges between individuals are based on the calculations of the parties to a transaction. In Mises' opinion, the idea that in a socialist society *in natura* calculation could take the place of monetary calculation is completely wrong. This is because monetary calculation provides guidelines on the wide range of choices which each of us continually has to take, whereas *in natura* calculation can only be of some limited use when choosing consumer goods. In fact it fails completely when it comes to choosing higher-level goods, that is, the wide range of existing capital goods.

In a socialist system monetary calculation would become impossible because money would be prevented from playing the role it has in determining the value of production resources in a competitive economy; but 'every step that takes us away from private ownership of the means of production and from the use of money also takes us away from rational economics'.[4]

Mises also claimed that only the profit motive could induce entrepreneurs to make choices involving the lowest production costs. Therefore he was convinced that in the absence of this motive the market mechanism would grind to a halt. In his eyes the market is the basic institution of capitalism, if not its very essence, and thus it cannot be reproduced in a socialist system. According to Mises, the behaviour of the manager of a private firm is necessarily different from that of the manager of a public enterprise because the problem is not to instruct those who run a firm to behave in one way rather than in another. In Mises' view what really counts is the springs of economic action and the profit motive is the only springboard capable of stimulating the search for combinations of factors which can reduce production costs to a minimum. It is impossible to teach someone how to be a businessman, he contended: teaching the basic rules of how to set the firm going and reduce production costs to a minimum is not enough to make a good manager. What is required is that whoever is running the firm is fully aware that the interests of the firm coincide with his/her personal interests.

Mises' conclusion was that socialism is an irrational economic system. It is true to say that socialists usually find fault with the market because of its 'anarchic' nature. In socialism, however, the 'invisible hand' which directs the distribution of resources within the market is replaced by arbitrary choices made by the state concerning the needs that are to be satisfied, so that the resulting system can be described as being devoid of any logic. The total disregard of the value consumers subjectively attribute to different commodities results in depriving socialism of the very possibility of economic rationality.

It is worth mentioning that Mises' article was written not only to oppose Marxist and utopian appeals to a centralized economic organization,[5] but also to refute the theses on planning and the transition from a war economy to the 'natural' economy propounded by Neurath in 1919 (Hayek, 1981, p. xxi).

1.3 ECONOMIC CALCULATION IN A SOCIALIST ECONOMY: BARONE'S CONTRIBUTION

As mentioned before, Mises' criticisms set off a long and heated debate. Yet the problem of establishing whether economic calculation was possible in a socialist economy had been solved several years before Mises actually launched his challenge: in an article published in 1908, the Italian economist from the Pareto school, Enrico Barone (1908), applied general economic equilibrium analysis to the economics of socialism and showed that, if resources available in limited quantities were to be rationally used, the problem of allocating resources and fixing prices was to be posed in the very same way in a capitalist system and in a socialist economy.[6]

Barone's analysis is laid out in mathematical terms and thus is rather complex; in general terms, however, it may be summed up as follows (with some very slight modifications).[7]

Let us assume that capital goods have been nationalized, but that individuals are free to choose both the occupations they prefer and the commodities that will best meet their needs; let us also assume that an omnipotent 'Ministry of Production' tackles the problem of how to use the resources available in the system in such a way that the citizens are guaranteed maximum welfare. Within this money-free system the Ministry may fix 'equivalences', that is, prices, for all the commodities and services produced and for all the services provided by existing workers and capital goods; whoever wishes a commodity will have to buy it from social stores against bonuses or money (where money exists) or by having the 'equivalent value' of the commodity noted in a register established for the purpose; those who provide services will be rewarded (in money or bonuses) based on the established equivalences. Hence the problem arises: can the Ministry of Production establish equivalences that will induce people to use resources as efficiently as possible in order to guarantee maximum collective well-being?[8]

To answer this problem, Barone assumed that the Ministry of Production begins by *randomly* fixing both the goods and services to be produced and the production coefficients (that is, the combinations of capital goods and labour necessary to produce them) while bearing in mind the need to employ all the available factors of production.[9]

Obviously our Ministry might choose the commodities to be produced from a large variety of possible 'commodities baskets', but once it has chosen the basket, it will have to fix prices or 'equivalences' in such a way as to induce consumers to buy quantities of the single commodities equal to those produced.

In its search for an ideal solution the Ministry will proceed by using the 'trial and error' method, that is, by continuously adjusting the pricing system until this brings about an increase in the general well-being. As shown by Pareto, optimality will be achieved when no departure from the situation reached makes some people better off without making others worse off; and this, Barone argued, would be achieved as soon as the value of the goods and services provided (based on the equilibrium prices fixed) was maximized.

The 'trial and error' method as described by Barone can be illustrated in greater detail as follows. Let us assume that the n equations reflecting the conditions in which the n production factors existing (workers and capital goods) are fully utilized are:

$$Q_i = R_i + a_i R_a + b_i R_b + \ldots + h_i R_h + k_i R_k + \ldots \qquad (i = 1 \ldots n)$$

where Q_i is the quantity of the factor i that is available, R_i the quantity of the same factor which is directly consumed, R_a, R_b ... are the quantities of m different consumption goods (A, B ...) that are produced, R_h, R_k ... the quantities of n' new capital goods (H, K ...) produced, and a, b ... h, k ... the quantities of the factor needed to produce one unit of the consumption goods A, B ... and (one unit) of the capital goods H, K ... (that is, the production coefficients of the factors involved). Let us assume, for the sake of simplicity, that the production coefficients are given and let us also assume that the R sets are chosen to guarantee the full utilization of the n factors; if the number of units of the commodity produced ($m + n'$) exceeds the number of factors employed (n), then there will be an infinite number of R sets which satisfy the equations.

Now let us fix a set of equivalences both for factors and for products; given the prices of factors, the incomes of the individuals owning those factors will be given and, provided the prices of the products are also given, it will be possible to calculate the quantities of the different commodities demanded by single individuals. For each set of factor prices, therefore, there will be a precise set of commodities prices at which demand equals supply in single markets. But as the prices of factors are unknown, there will be an infinite number of sets of equivalences where the markets of all commodities are balanced.

Having established this, let us now set out from any set of equivalences where demand equals supply in all markets. To identify the production of commodities which is an optimum (the best possible product mix), the Ministry will have to proceed in the following manner. For each commodity (the prices of the factors required to produce it being given) it will have to compare the price with the relevant production cost; and if the price exceeds the production cost, it will have to order a greater production quantity of the commodity concerned. This is because every increase in output, while subtracting the goods needed for the production process from personal consumption and other possible uses, will increase the value of the production by a measure greater than the reduction in the value of the commodities and services that would have been obtainable if the goods employed in producing the additional quantities of the commodity concerned had been directed to other uses. Thus equilibrium requires average production costs to be equal to prices for each single commodity.

That is the reason why the Ministry will have to adjust prices by recourse to the trial and error method until the price of each commodity equals its production cost.

Let us add that the relevance of this lies in the demonstration that price fixing cannot be equated with the market process.[10] And in Barone's line of reasoning prices include not only those of consumption goods, but also those of production services: wages, the price paid for using labour; interest, the price paid for using savings, that is, capital; and rent, the price paid for the use of land.

Hence Barone's conclusion that in a collectivist state,

> if the Ministry of Production proposes to obtain the collective maximum – which it obviously must, whatever law of distribution may be adopted – all the economic categories of the old regime must reappear, though maybe with other names: prices, salaries, interest, rent, profit, saving, etc. Not only that; but always provided that it wishes to obtain that maximum with the services of which the individuals and the community dispose, the same two fundamental conditions which characterize free

competition reappear ... we refer, of course, to the conditions of minimum cost of production and the equalization of price to cost of production. (Barone, 1908, p. 289)[11]

A second problem raised by Barone was the manner in which the products of the capital goods appropriated by the socialist state were to be distributed. But this topic will be dealt with later on.

As mentioned above, in the first part of his article Barone contended that equilibrium was to be achieved by recourse to the 'trial and error' method. At the end of his analysis he further investigated this topic in order to highlight the difficulty involved in solving the general equilibrium equations *a priori*. He argued that the first difficulty is encountered when trying to calculate the level of demand for each set of prices chosen at random. This difficulty derives from the immense multiplicity of individuals and commodities that one has to take into account: but it is not inconceivable that this difficulty can be successfully overcome, thanks to great organizational efforts and hard work.

What cannot conceivably be achieved *a priori*, he added, is a choice of production coefficients capable of minimizing production costs. Barone clearly stated that the most economically advantageous coefficients were to be chosen experimentally, as in a laboratory; and he also specified that, as the greatest differences in costs arise from variances in the dimensions of firms, this would require large-scale experimentation involving the testing of highly different alternative production combinations. Thus, 'assuming the practical possibility of such a system', he anticipated the need to pay salaries to an army 'of officials whose services would be devoted not to production but to the laborious and colossal centralization work of the Ministry' (Barone, 1908, p. 290).

The relevant experiments would be very costly, because they involve establishing and running firms as efficiently as possible with a view to eventually dismantling them if they did not prove efficient enough. Thus Barone's contention was that firms should also be allowed to go bankrupt in a collectivist system and that the waste entailed in bankruptcy was thus not exclusively attributable to the 'anarchical' character of production allegedly typical of capitalism.[12]

It is worth mentioning that Barone's analysis was not intended as a criticism of 'collectivism'. He said:

in the consideration of production in a collectivist State there are two questions entirely distinct from each other. The first is: will it be beneficial for some of the capital to become collective property and for production to be socialized? The second is this: how, in a collectivist regime, ought production to be directed? One can discuss the second question quite independently of the answer one gives to the first. My particular purpose here is to make a study of the second question, setting the problem in as precise a form as is possible. Hence I do not write for or against collectivism. I assume it to be established in a certain social group and I propose to establish certain general lines of the solution which the Ministry of Production ought to give to the vast problem with which it is faced.[13]

Despite this explicit statement, from what was said previously we can infer that Barone was critical of collectivism. On closer analysis, his article raises two distinct categories of objections to the form of socialism which was then being proposed. Adopting a terminology proposed by Lavoie, two distinct classes of problems may indeed be identified for the Ministry of Production to solve: the problem of economic calculation and the computation problem; and Barone, like Hayek after him, explicitly stated that an economic system without a real market has no possibility of solving either problem. Of the two, the problem of economic calculation is the more crucial one and entails collecting all the information needed to fix prices rationally; the computation problem, instead, simply involves solving the equations which faithfully reflect the choices made by everybody. Barone was fairly explicit in claiming that no Ministry of Production would ever be in a position to collect all the information required for the purpose,[14] and he also ruled out that the Ministry of Production would be able to solve the general equilibrium equations. 'For the solution of the problem it is not enough that the Ministry of Production has arrived at tracing out for itself the system of equations of the equilibrium best adapted for obtaining the collective maximum in the well-known sense ... It is necessary to solve the equations afterwards. And that is the problem' (Barone, 1908, pp. 286–7).

The fact that the Ministry of Production would be unable to solve the general equilibrium equations even if it was able to work them out was restated by Robbins and Hayek almost thirty years later (Robbins, 1935a, p. 151 and Hayek, 1940, pp. 125–6); but today, in the age of electronics and computers, the computation problem raised here can be solved (see, for example, Cave, 1980, p. vii). And this may explain why a critic of market socialism like Lavoie, persuaded that the insoluble problem is how to collect the required information, resorts to criticizing Barone (and also Hayek and Robbins) for attaching great importance to the computation problem and failing to state that all the difficulties exclusively lie in the process of collecting the required information in a continuously changing world (Lavoie, 1985, pp. 84–5 and 90–91).[15]

1.4 TAYLOR'S CONTRIBUTION

Barone's approach deserves much more attention than we can afford here and we shall indeed provide further comments on it in one of the next sections.

What must be said here, however, is that after propounding his problem in the important article mentioned above, Barone failed to provide a satisfactory solution to the question of what kind of organization a socialist economic system would have to set up in order to achieve the equilibrium he had suggested. Barone spoke of an organization based on trial and error experiments and did actually hint at the 'social experiments' that would be needed in order to come up with the most economical combinations; but the problem would certainly have required greater analysis.[16]

More than twenty years elapsed before any fresh contributions were published on the topic. And once again it was thanks to a non-socialist economist, the American Fred Taylor (1929), that the debate took a further step forward.[17]

Taylor is usually credited[18] with having clarified the manner in which the trial and error procedure was to be carried out. The heart of the matter, Taylor wrote, is to attribute a value – the right value – to the factors of production; for, if the economic problem to be solved is how to rationally use the scarce resources available, it is only by attributing the right value to the single resources available in the system that a rational choice from alternative possibilities becomes feasible. The relative importance of single production factors depends on the importance, and therefore on the value, of the goods which they produce. But how can the single factors be rightly priced?

Taylor suggested applying the same 'rules' which are adopted in capitalist economies.[19] Initially the 'Ministry of Production' – to continue using Barone's phrase – would have to attribute a random set of prices to the single factors of production: the authorities in charge of managing single production activities would then have to make their choices in order to select the productive coefficients which would involve the lowest production costs; and from the firms' levels of demand for each factor it would then be possible to infer whether, at the given price level, demand would or would not exceed supply. In the former case, the Ministry of Production would have to raise the price of the scarce factor; conversely, if a certain quantity of the factor in question remained unemployed, then the Ministry would have to reduce its price.

The right equilibrium prices of all the factors would be determined by successive trials and errors.

As for the prices of consumption goods, Taylor made it clear that the Ministry would have to fix prices at their average cost level[20] (Taylor, 1929, pp. 45 and 48–9), but that the trial and error method would finally lead to equating demand and supply for these commodities too; because if demand exceeds supply at the price fixed, then the production volume and, possibly, both the cost of the commodity concerned and the demand for the factors required to produce it would increase. This would in turn boost the prices of the relevant factors and, consequently, both the production cost and price of

the commodity concerned. And this would be enough in itself to reduce excess demand.

Taylor also suggested that the authorities of a socialist state would have to do their best to distribute income among citizens in such a way as to distribute the total revenue of the state in keeping with the general interests of the citizens and of the community taken as an organic whole (see Taylor, 1929, p. 44). In the light of these observations on the pricing of factors, however, this statement comes as somewhat perplexing. If, indeed, the prices of the single factors (and therefore also the price of labour) are determined by the market mechanism, what use is there in speaking of a '*socially* fair system' of income distribution? But this is a problem that will be more thoroughly examined further on.[21]

1.5 A FEW OBSERVATIONS ON BARONE'S AND TAYLOR'S CONTRIBUTIONS

As mentioned before, it is often said that Barone failed to specify what kind of organizational lines a socialist economy would have to adopt in order to find a practical solution to the problem of economic calculation (which he had solved in theory), so that Taylor is given full credit for clarifying in what way the equilibrium identified by Barone could actually be achieved. In the opinion of Ward, the importance of Barone's approach lies in the fact that he was the first to show that prices could also be fixed in the absence of a market.[22] Both these contentions will have to be further explained and corrected, because in actual fact Barone showed only that the general economic equilibrium equations could be solved in theory, that is, *on paper*, also in a socialist order, but he clearly and repeatedly denied that such equations could be solved in practice without recourse to the market.

Barone dedicated four sections (from 55 to 59) of his article to showing that 'the equilibrium equations cannot be solved *a priori*'. As mentioned before, he observed that the difficulties attending any attempt to solve the equilibrium equations without recourse to the market would be enormous even if one could disregard the possible variations of production coefficients. Indeed it would take a 'tremendous, gigantic effort' to set up an organization capable of collecting all the data needed to construct the demand curves which reflect the preferences of single individuals, that is, the quantity of a commodity each single individual would be prepared to buy at each price.

The *a priori* construction of demand curves performs the function which market research performs today. This leads us to the second observation: only an organization which artificially reproduces at least some of the functions and characteristics typical of the institution we call 'market' will be able to establish the preferences of individuals and, hence, their demand curves.

Furthermore Barone claimed that if, as is certainly necessary, one was also to account for the variety of technically possible production coefficients, then the very idea of solving the general economic equilibrium equations, albeit only on paper, would appear 'inconceivable'.

This enables us to throw light on the point raised above, that is, whether Barone actually proved that the general economic equilibrium equations could be solved on paper without recourse to the market. But what does this actually mean? We shall deal with this problem more fully further on; here we merely want to say that solving the general equilibrium equations on paper obviously means solving them by sitting down and working them out at the desk (today with the help of a computer) *without recourse to the market*; but, as mentioned before, if solving these equations at the desk means *solving the same equations as are solved by the market*, that is, accounting in full for consumer propensities, then this could only be achieved by performing an immense task consisting in the market researches needed to draw up the relevant demand curves, that is, to write the equations (which a computer will then solve in a few minutes). But if the intention behind such market research is to collect the very same information which would be provided by the market proper, is it not meaningless to say that the equations can be solved on paper without recourse to the market? Although this is one of the main problems that will have to be thoroughly dealt with further on, the conclusion which all those adopting Barone's line of reasoning will reach is evident: if the general equilibrium equations are to be solved by taking account of consumer preferences, recourse to the market (in a manner still to be specified) is in any case necessary. On closer analysis, Barone's paper clearly reveals the awareness of its author that the equations needed to identify the equilibria of a socialist order would either have to be solved with the help of the market (and in this case the trial and error method suggested by Barone is basically identical with Walras's well-known *tâtonnement* process) or remain unsolved altogether.[23]

Those who claim that Barone did suggest a method for solving the general equilibrium equations in theory and without recourse to the market are consequently wrong; in Barone's model there is demand (real or simulated) from the market for commodities and for production factors and it is this that determines both prices and production costs. What may be said is that Barone's model would leave nothing to the initiative of firms if fixed production coefficients were assumed; and this would involve nullifying a basic aspect of the market, that is, competition, but not the market as such (see below).[24]

One of the differences between Barone's and Taylor's approaches is the following. As mentioned, above, Barone suggested that the Ministry should fix the quantities of the single commodities to be produced and then try to

identify the prices at which demand and supply would balance out; that is, a procedure by which prices would be adjusted by successive trials until they equalled production costs. (From the conventional instruments of analysis available, therefore, he did use demand curves and price/cost comparison, but not supply curves as well.) Conversely Taylor suggested that the planner should price commodities and then leave it up to the free operation of the demand/supply mechanism to fix equilibrium prices by successive trials, based on the utility calculations of consumers and minimum cost calculations of managers requiring factors of production.[25]

Consequently it seems inappropriate to claim (as Lange and Lippincott did) that, unlike Taylor, Barone failed to specify the type of organization that would be needed in practice to solve the equations he had worked out. It would be more appropriate to state that both Barone's and Taylor's analyses did suggest possible methods of organizing a socialist society, except that they proposed different forms of organization.[26]

Lavoie has recently re-emphasized that the difference between Barone's and Taylor's respective approaches lies in the fact that, while the former confined himself to a strictly theoretical line of reasoning, the latter also discussed how a socialist system was to be organized in practice. Lavoie credits both Barone and Wieser with solving the problem of 'formal similarity', that is, with showing in strictly mathematical terms that to allocate resources rationally a collectivist system will have to observe the rules of optimality laid down in marginal utility theory, the rules inherent in market systems with perfect competition. According to Lavoie, the use of mathematical analysis induced Barone to tackle a problem of merely formal equilibrium; and, having discovered that the set of equilibrium equations for collectivism was by no means different from the relevant set for a free competition system, he ultimately set aside the problem of establishing whether the new social system was actually practicable. As for Taylor, Lavoie credits him both with solving the problem of 'formal similarity' in a manner resembling Barone's and with tackling the question of possible planning procedures (see Lavoie, 1985, pp. 83–8).

It is worth restating here that we do not share this opinion. Lavoie himself admits that in the last four pages of his article Barone concentrated on the manner in which the planner could collect the data required to work out the equilibrium equations of a collectivist system. In point of fact, however, the differences between Barone's and Taylor's approaches to the two issues highlighted above are only a minor problem, because their approaches diverge in another and more crucial point on which it will be worth focusing. It will be seen, in fact, that Lavoie and many other authors who followed in the wake of the Austrian tradition failed to recognize the step forward which Taylor's contribution marked with respect to Barone's and which will be discussed in the next section.

1.6 THE MAIN DIFFERENCE BETWEEN THE MODELS OF BARONE AND TAYLOR

What has been discussed up to now leads us to highlight the main and most crucial difference between Barone's and Taylor's respective contributions. As mentioned above, based on the kind of organization he had suggested, Barone proposed that the planner should collect the information required to work out the demand curves of commodities 'at the desk'; that is why he rightly observed that no planner would be able to cope with such an awesome task. Conversely, by suggesting recourse to the Walrasian method of *tâtonnement*, Taylor was actually claiming that the planner did not need to work out the demand curves at the desk (or, for that matter, the consumer goods curves and capital goods curves), so that in the type of organization proposed by Taylor the planner's task is less arduous. In particular, as will be seen when dealing with Hayek's criticism, the organization proposed by Taylor enables the planner to dispense with collecting the huge quantity of dispersed information that only the market is able to collect. As mentioned before, Taylor proposed that the Minister of Production should adopt the Walrasian *tâtonnement* method, that is, recourse to the market proper; and this is the reason why his approach does not come in for the severe criticisms meted out to those who have adopted, or would still propose adopting, Barone's arrangement.

Let us state once again that Barone suggested solving the general economic equilibrium equations 'at the desk'. These equations need to be worked out thoroughly before they can be solved and the calculation of the parameter values of these equations is quite simply a task beyond human capacity. Conversely, Taylor never suggested solving any complex set of equations at the desk. His proposal was to leave it to the market – the market proper – to fix equilibrium prices. And this is precisely the point on which their organizational proposals diverge more sharply.[27]

In his famous article, which will be examined in detail later on, Lange wrote (Lange, 1936–37, pp. 64–5) that Taylor's main achievement was to have specified 'quite clearly' that the trial and error method could be used to solve the general economic equations in a socialist system. In the same article he also admitted that the use of the trial and error method had previously been suggested by Barone, but observed that Barone had failed to make it clear how such a method could be carried out. Lange's conclusion, though, was that in 1936 the state of the debate on that subject had 'scarcely gone beyond what is already contained in Barone's paper' (Lange, 1936–37, p. 59).

But if all of the above is indeed true, Lange's conclusion must be thoroughly reconsidered. Barone himself stressed that his organizational proposal was impracticable because collecting the information for the demand curves and solving the general economic equilibrium equations at the desk were two impracticable tasks. Conversely, Taylor's organizational proposal is perceived as feasible by all those willing to agree on his statement that 'it seems certain that the authorities of our socialist state would not have difficulty in deciding whether the standard evaluation of each single factor is too high or too low' and that 'once this has been ascertained, the rest would be easy' (Taylor, 1929, p. 54). Consequently there is no doubt that Taylor's organizational proposal does not require the solution of a complex set of equations at the desk and leaves it to the market to decide whether too much or too little of a given commodity has been produced.

One shortcoming observed in Taylor's contribution is the fact that he leaves little, if any, autonomy to single firms. When dealing with production choices for single commodities, Taylor did not say that they were to be made by independent managers; instead he always spoke of 'authorities' called upon to decide whether to employ more or less than one production factor. On closer analysis the word 'firm' never appears in his paper and the terms planners, authorities and managers are used as synonyms to describe those who make all decisions. And this is certainly one defect in his work.[28]

As will be shown in due course during the following exposition, Taylor's article fails to clarify more than one important point because of its brevity.

1.7 ARE ECONOMIC LAWS ETERNAL?

Having analysed Barone's and Taylor's contributions in some detail, let us now try to establish what bearing they have on the point which we termed the crux of the issue right at the beginning.

The first thing to be said when assessing the relevance of the analyses dealt with above[29] is that they provided an extremely simple answer to a problem which traditional theory had already solved (see Dobb, 1939a, p. 242 and 1969, pp. 188–90; Schumpeter, 1942, pp. 174–5; Bliss, 1972, pp. 90–91). Since Marshall's day, and perhaps even earlier,[30] scholars had focused on the fact that any demand for factors is 'derived' from the demand for products; consequently, if Mises claimed that a system could not work without a market to devise the scarcity indexes of capital goods, one might have promptly answered that in actual fact the problem was non-existent because wherever there are markets of consumer goods, the capital goods required to produce such commodities are also priced in those same markets.[31] And this is exactly the perspective from which Taylor addressed the issue (see Taylor, 1929, pp. 46–7).

As will be mentioned in greater detail below, Barone's and Taylor's solutions are simple only at first sight, when they are interpreted as being exclusively theoretical, that is, only intended to solve an abstract problem and to refute Mises' arguments without proposing a practicable model of socialism. However, the fact remains that Taylor (Barone only to a lesser extent) promptly and vigorously raised the issue of a feasible form of socialism; consequently his analysis cannot be investigated in depth by confining oneself, as it were, to counting equations and unknowns, that is, examining only the purely formal aspects of the matter.[32]

Be that as it may (whatever the end result of the wider debate which their writings started and regardless of whether the points they raised are to be classed as simple or not), the real import of the main contributions of these two authors to the theory of socialism is clear. They showed that basic categories of economic science such as prices, wages, rents, interest, and so on (which socialists had long been assuming would disappear with the end of capitalism[33]) actually reappear somehow within the organization of a socialist system as soon as the planner addresses the scarcity problem with a view to rationally using available resources.[34] As for socialism, this means that, every time the problem of a rational use of scarce resources is raised, it is impossible to dispense with some of the categories which traditional economic science has used and still uses when interpreting the reality of capitalism.[35]

Here is Lunghini's excellent approach to this issue:

> Critically speaking, neo-classical analysis made its most vital contribution to the theme of disaggregate general equilibrium when it approached the problem of economic calculation by showing that it was independent of any institutional context whenever the problem was to rationally use production resources available in limited quantities. To interpret the economic problem as being the issue of scarcity and prices as being the indexes measuring such scarcity – and, consequently, the economic system as a mechanism – may not appear satisfactory to some and is certainly not an exhaustive approach: nonetheless it means raising one of the economic problems and *one* of great consequence. (emphasis in the original)[36]

Nevertheless, when Barone argued that even the Minister of Production of a socialist system would always have to use scarce resources rationally (a task which the market is known to perform spontaneously) and when he concluded that the Minister would perform his/her task with utmost care only to see the economic categories of the previous regime (profits, wages, rents, and so on, that is, the categories Marx fiercely criticized) surface again with different names in the new system, he was clearly criticizing Marx and all his followers who like him predicted the disappearance of those categories.[37]

We shall come back to this problem later on. Meanwhile let us just stress that today only orthodox economists interpret Barone's and Taylor's results as

a basis to contend that the categories of economic science are *natural* and necessary categories which have always existed and will last for ever (and that Marx's definition of economic science as a historical discipline is consequently to be refuted). Even if scarcity will always be a problem (since human needs are unlimited and the means available – regardless of how affluent society may become – are inevitably limited compared to needs),[38] in the eyes of some more radical critics there is no reason to state that the primary and basic problem which society must solve is perennial scarcity[39] and will always have to be tackled in strictly economic terms, that is, by calculating costs versus revenues.[40]

1.8 HAYEK'S CONTENTION THAT SOCIALISM CANNOT WORK

After the publication of Taylor's contribution (and Dickinson's[41]) economists ceased claiming that socialism cannot work 'in principle' because it is unable to solve the problem of rationally allocating available resources. Critics of socialism confined themselves to contending that a socialist economic system, even one operating through the market, would necessarily face difficulties which could not be side-stepped in practice. In fact, they expressed the view that in practice resources could not be rationally distributed between competing uses in the absence of privately-owned production means. A case in point is Hayek, whose main arguments will be summed up below (see Hayek, 1935b and 1935c).[42]

In his best-known contribution on the topic, Hayek presented market socialism as a system in which economic life is managed by centrally-directed organizational structure and all choices concerning production activities are vested in the planner, but where the planner uses prices as scarcity indexes of the resources available. While this may suggest that Hayek misunderstood both Taylor's and Dickinson's approaches (see Ward, 1967, pp. 24–5), it is none the less a possible interpretation of the role of prices in socialism (and an interpretation which is all the more significant since the Soviet system adopted the centrally-directed model).

Having presented market socialism as a fully centrally-directed planning system, he then argued (in line with Barone) that a rational use of resources was impracticable because the socialist planner would have to collect and process a huge body of data beyond the capacity of any office, however large and well organized.

If central direction – he wrote – has to take the place of the managers of single firms, then it cannot merely provide general guidance, but must take on responsibility for every aspect of production activity and every single organizational detail: in particular, it will be impossible to decide rapidly what investments a firm should make and what materials it should be assigned, without simultaneously deciding how the machinery and materials will have to be used. But as one firm is different from another, this means that the planner could only distribute resources rationally by making a huge number of decisions (as many as the single capital goods to be assigned to firms) and dealing with an equally huge quantity of problems. To make rational choices, the central planning office would have to collect a body of data exceeding human capacity.[43]

Nor is there any reason to assume – Hayek continued – that the task of the planner might prove less difficult in practice, that is, that *setting out from a given situation*, he/she would only have to adjust the organizational structure in order to adapt it to minor changes occurring from time to time. To assume this, he contended, would mean disregarding the fact that if the starting situation is that of the previous capitalistic order, then the required changes would be all but negligible. Above all it would mean failing to take into account that in an evolving system a huge number of changes would be observed from year to year because (i) every increase in income would change demand from day to day and (ii) hundreds of other prices and output levels would have to change as a result of any price adjustment or increase in the quantity of a commodity produced by a single firm.

It is absurd to imagine that all the adjustments required in single firms as a result of this huge number of changes could ever be centrally directed by one authority (see Hayek, 1935c, pp. 213–14). On the other hand, if the central authority were to confine itself to making occasional adjustments valid for fairly long periods of time, prices would no longer reflect the actual importance and scarcity of the resources.

Next Hayek examined decentralized socialism with competition, but he considered it a solution in which the need for a central authority would not appreciably decrease; also in such a system, he argued, the state, being the owner of production means, would necessarily have to take upon itself such tasks as rationally allocating investment resources and allotting every single plot of land or every single capital good to firms by constantly selecting precisely that firm which would put them to most profitable uses (see Hayek, 1935c, pp. 208–10).

Hayek's main contribution in this field is his analysis of the problem of risk-taking. He anticipated that firms would show a strong propensity towards risk aversion and backed up his assumption by emphasizing the differences between the respective positions of a capitalist entrepreneur and a firm manager in market socialism. While the former faces bankruptcy if his/her business goes wrong and earns substantial returns if he/she is successful, in market socialism a manager who was found to ruin a firm with his/her risk-taking would face dismissal, while in the event of successful operations he/she would receive no reward.[44] Moreover, he observed, who would decide whether a risk is worth taking? And on what elements would such a decision be based?

Further on we shall return to the problems raised by Hayek as early as in 1935. Here it will suffice to argue (as Dobb did) that, unlike Mises, at that time Hayek and other critics of socialism did not deny the theoretical compatibility of socialism with a rational allocation of resources. Confining themselves to discussing whether it could work in practice, they introduced a completely different perspective into the debate[45] because they drew attention to a wide range of issues such as information and monitoring systems, motives behind human action and incentives. Let us also mention that, as these problems were thoroughly discussed in Eastern bloc countries for years, before the collapse of their systems those countries reintroduced the market at least in part in order to find a solution to the shortcomings of their centrally – and bureaucratically – directed economies (Dobb, 1969, pp. 184–5).

Hayek's analysis of *whether* socialism could work in practice had been preceded by Taylor's lucid discussion of *how* socialism could work. This is why, commenting on Hayek's propositions, one ends up by repeating a criticism already mentioned in this book, that is, the objection that Hayek seems to have disregarded what other economists had written and clarified before him. This is why his analysis, far from marking any appreciable progress over the previous state of the debate, suggests a reversion to previous stances.[46] Hayek, in particular (and Lange after him), failed to understand the step forward (already pointed out in Section 6) that Taylor's contribution had marked with respect to previous discussions.

1.9 THE AUSTRIAN INTERPRETATION OF THE MODELS OF BARONE AND TAYLOR

As mentioned above, when Hayek's articles appeared in 1935 the main point of the debate regressed to its original starting-point because Hayek was unable to see that Taylor's contribution had made definite progress over Barone's previous suggestions. In all probability it was Hayek's contribution that determined the direction of future discussions. As will be shown in greater detail in the next chapters, it is because of Hayek's influence that Taylor's contribution has constantly been underestimated ever since.[47]

Hayek's argument was that the centralized socialist model did not significantly differ from the decentralized model, because in either case the state, being the owner of production means, was to allot every single item of capital goods to enterprises. Taylor, instead, had actually devised a system in which the allocation of resources was left to the market. Whatever the interpretation of his article, therefore, the fact remains that it was he who paved the way for the proposal of socialism with autonomous firms.

Crucial points in Taylor's contribution were the need to price commodities in such a way that the quantities of each commodity freely demanded by consumers in the market would equal the quantities supplied and the need to produce a quantity of each commodity that would minimize production costs. Another equally crucial point was that the prices of capital goods (the demand for which is derived from the demand for the commodities they produce) would have to be fixed at the level at which demand equals supply and reflects production costs. Nowhere in Taylor's contribution is there the slightest hint at Barone's suggestion to solve the required equations on paper; conversely, Taylor stressed that the quantities demanded and supplied would have to be determined based on maximum utility or minimum cost calculations and that prices would have to be fixed using the trial and error method, and he also made it clear that those in charge of production were to reduce costs to a minimum. A question left unresolved to a certain extent is precisely who will make the relevant decisions, since Taylor simply spoke of 'authorities' and described a five-stage trial and error procedure during which production factors were priced based on factor-valuation tables drawn up by the central authority. But nothing is left to the discretion of bureaucrats, since prices are increased or decreased only with a view to balancing costs and revenues, in line with the interplay of demand and supply (Taylor, 1929, pp. 51–3).

If this is true, then when he argued that the state simply cannot decide how to allot each single capital good or production line, Hayek did not achieve what he had intended, that is, to ridicule models such as Taylor's. If production is organized separately in each firm, it will be up to the managers of those firms to distribute their capital goods among single-use destinations. The only serious problem that remains unsolved in a model such as Taylor's is how to devise a system of incentives which will induce managers to choose the production combinations that will minimize costs. Today it is clear that the simplest and most effective incentive system is to grant managers shares in the profits earned by their firms. Consequently it is possible to say that the only important (though simple) idea that is lacking in Taylor's short article is the recommendation to induce managers to pursue maximum efficiency by granting them parts of the profits, by obliging them to incur part of the losses of their firms or by devising suitable promotion schemes.

Once it has been made clear that in a model such as Taylor's (in which the prices and output scales of all commodities are determined by the market) the responsibility for choosing product mixes and production modes must necessarily be left to the managers of single firms, it follows that the managers will also have to be empowered to make investment decisions (that is, to require the allotment of given capital goods rather than others – that is, decide

how to allocate their capital goods among competing uses), made answerable for any wrong decisions, and thus punished or rewarded based on the effects of their choices. Also in this respect, it seems obvious to state (though Taylor failed to mention it) that, once it is made clear that managers must be induced to make efficient choices by granting them shares of their firms' profits or suitable promotion or, conversely, making them incur part of their losses, investment decisions must be left to the managers of the single firms.

Although the shortness of his article prevented Taylor from being more explicit, we do think that this is what he actually had in mind. If – summing up – the general ideas expressed in Taylor's article are (a) that each article, be it a consumer or capital good, will have to be priced by devising the price that will balance demand and supply and (b) that all goods are to be produced at their minimum cost, then what else could Taylor have had in mind if not a system in which the managers of firms were to make maximum efficiency choices either out of a sense of duty or with a view to receiving due reward? What seems important is to show that, within the rationale of Taylor's model (and, later on, Lange's), (a) these choices must necessarily be left to the managers of single firms; (b) one will have to devise a system of incentives that will induce managers to behave as they are expected to do; (c) managers will have to devise equilibrium prices by using the trial and error method, that is, a real and proper market system; (d) the required data will have to be collected in the market.

When a number of economists again raised the problem of solving complex systems of equations *on paper* without collecting the required data in line with the typical market mechanism, they actually caused the discussion to move a step backwards. Their discussions would have been justified if Taylor had never written his article or if that article had never been read, but although Taylor's paper attracted scant attention on being published, the authors who carried on the debate years later had doubtlessly read it, so that theirs was an unpardonable scientific error.

From what has been said it follows that the analysis of Taylor's article that Lavoie included in his 1985 book was equally marred by a misinterpretation of Taylor's thought because conducted from the perspective of Hayek and the Austrian school (see Lavoie, 1985, pp. 86–8, and, further on, Section 9 of Chapter 3).

For purposes of greater clarity, Taylor divided his article into two sections. In the first he assumed that both consumer income levels and commodities prices were given and that consumers would make their purchase choices based on these; in the second he described his trial and error method in order to highlight the way family incomes and prices were to be determined. Analysing the first section of Taylor's paper, Lavoie assumes it to purport that the required information has already been collected by the planner without recourse to the market; this is why he writes:

> it should be evident ... that Taylor's first problem begs the question of the calculation difficulty that had been raised by Mises, whose argument was that money prices are the only workable indicators of the relative 'effective importances' that Taylor assumes are already embodied in factor-valuation tables. It would surely not have surprised Mises that if one assumes that these tables contain the same knowledge that competitive bidding imparts to prices under capitalism, the calculation problem is easily solved. (Lavoie, 1985, p. 87)

Lavoie added that the second part of Taylor's analysis was certainly intended to illustrate the method that would have to be followed in practice if planning was to become efficient; but in his opinion this was not the most significant part of Taylor's contribution.

Lavoie's assumption that Taylor intended to suggest (like Barone) that the general equilibrium equations were to be solved on paper by collecting the necessary data without recourse to a market proper is his second misinterpretation of Taylor's thought. In point of fact – let us emphasize this once again here – Taylor never even mentioned solving the equilibrium price equations on paper, but spelt it out in bold letters that the planner would have to use a real and proper trial and error method exactly like the one adopted in capitalist systems on a daily basis.

NOTES

1. On occasion the problem discussed in this chapter was addressed not only by querying whether socialism was in a position to work more or less efficiently, but even by calling into question its very prospects of survival (Schumpeter, 1942, pp. 172 ff.; Bergson, 1948, p. 447). Today, after the collapse of the Soviet system, this particular approach appears both interesting and prophetic, although it must be admitted that socialist economic systems existed in Europe for more than seventy years and still survive elsewhere.
2. For reviews of this debate, see Hayek (1935b and 1935c); Bergson (1948, pp. 432–48); Landauer (1959, pp. 1619–65); Ward (1967, Chapter 2); Jossa (1978, Chapters 1–3); Vaughn (1980); Lavoie (1985, introduction and pp. 74 ff.); Pagano (1985, Chapter 8); Screpanti and Zamagni (1989, pp. 278–82); Temkin (1989); Keizer (1989); Roemer (1994, Chapter 4).
3. For a sound analysis of Mises' criticisms, see Tisch (1932, pp. 59–75); Rothbard (1976, pp. 67–76); Murrell (1983); Lavoie (1985, Chapters 3 and 4); Cubeddu (1992, pp. 281–307); and Vaughn (1994, pp. 39–46).
4. See Mises (1921, p. 104). While, according to Lange and Schumpeter, Mises' arguments merely seem to suggest that in socialism rational economic calculation is impossible *in theory* (also see Temkin, 1989, p. 199), according to a different interpretation, they actually mean that rational calculation is impossible *in practice* (Hayek, 1940, pp. 143–4; Bergson, 1948, pp. 446–7; Streissler, 1994).

5. It has been argued that in the debate that followed fifteen years after the publication of his article, Mises was also defeated because of the polemical and aggressive tone of his contribution (see Blaug, 1933, p. 1571).
6. A few economists had addressed this problem even before Barone (see Wieser, 1889; Pareto, 1897, pp. 97 ff. and 405 ff.; Pareto, 1927, pp. 233–4; Pierson, 1902; and Wicksell, 1911, pp. 82–3, who also provides a comment on Pareto's contribution). As Mises ignored the contributions of Barone and other authors, he has often been charged with insufficient documentation and scientific inaccuracy (see Nove and Nuti, 1972, p. 12; Murrell, 1983, p. 92; and Temkin, 1989, p. 199). For an excellent review of those early contributions, see Landauer (1959, pp. 1619–32).
7. For brief reviews and comments on Barone's propositions see, for instance, Zassenhaus (1934); Landauer (1959, pp. 1632–5); Seligman (1962, pp. 107–9); Lavoie (1985, pp. 78–85).
8. Although he mentioned well-being, Barone accurately avoided every reference to the concepts of utility or marginal utility in order to avert the risk of overemphasizing the links between his contribution and the theories of the Austrian school and, consequently, confining the scope of his article; he likewise abstained from using Pareto's indifference curves although he deemed it an important and useful analytic aid.
9. This procedure is based on the assumption of the validity of Say's law (Barone was writing thirty years before Keynes). While this would probably require some further explanation, here we must confine ourselves to observing that Barone's propositions are based on the assumption that it is possible to rule out any temporary excess production, that is, cases of insufficient effective demand.
10. See Ward (1967, p. 19). Let us mention, however, that this contention needs to be further investigated because the market obviously plays a role even in the case discussed by Barone; see further on.
11. Wieser was the first to argue that rent and profit cannot be abolished in a rationally organized communist society (1889, pp. 60 ff.); for an approach recalling Wieser's, also see Merlino (1898, pp. 56–7).
12. In the opinion of a few writers Barone failed to realize that some of the trial and error experiments could be 'tested on paper' instead of being carried out in practice and he never even mentioned the possibility of having recourse to market researches (see Landauer, 1959, pp. 1634 and 1636).
13. See Barone (1908, p. 245). For a similar contention, see Wieser (1889, pp. 61–3).
14. Barone's thought has been repeatedly misrepresented. According to some writers he never argued that only the market was in a position to collect the required information (see, for example, Vaughn, 1981, p. xi and Lavoie, 1985, pp. 83–92); and Mises even went so far as to maintain that Barone 'did not penetrate to the core of the problem' (Mises, 1932 and 1951, p. 117). For a correct interpretation of Barone's thought, see Bardhan and Roemer (1993b, p. 4).
15. In the opinion of Stiglitz, it is the rationale underlying the theory of general equilibrium *à la* Arrow–Debreu that tends to reduce economic science to an 'engineering economy', that is, a science which is merely concerned with solving maximization problems and consequently underrates the need to collect information (Stiglitz, 1993, pp. 21–2). This problem will be tackled further on, during the discussion of Hayek's contribution and Lavoie's interpretation of the problem of economic calculation in a socialist economic order.
16. See Lippincott (1938b, pp. 13–14); Lange (1936–37, pp. 57–65); Hayek (1945a, pp. 90–91); Landauer (1959, p. 1646); Ward (1967, pp. 18, 21 and 22).

17. For a review of Taylor's contribution set against the background of his overall scientific achievement, see Dickinson (1960).
18. See the passages from Lippincott, Lange, Landauer and Ward already quoted in note 16.
19. In an unpublished draft version of the introduction to the article here under review, Taylor wrote: 'The basic principle underlying pricing ought to be essentially the same in any economic order' (Dickinson, 1960, p. 50).
20. Although some writers hold that Taylor fixed optimal production at the level at which marginal cost equates price (see, for example, Ward, 1967, p. 22), this statement cannot be found anywhere in Taylor's article. As will be clarified below, Taylor actually thought that each commodity should be manufactured in the quantity for which there is sufficient demand at a price equal to its *average* cost and that the equilibrium output level of each commodity is thus the one at which its demand curve and average cost curve meet.
21. Other contributions to be mentioned besides Taylor's are those of Dickinson and Landauer. Dickinson contended that a socialist order meaning to create real markets for capital goods as well would have to *play at free-market competition* because this would enable even scarce goods to be rationally priced (see Dickinson, 1933 and 1939). As for Landauer, he remarked that Heimann's introduction of the concept of 'market socialism' in an article (1932) now almost completely forgotten probably marked a significant advance over Taylor's contribution. In that article Heimann proposed a form of 'market socialism' with largely autonomous firms and a system of incentives for managers (see Landauer, 1959, pp. 1643–54). The reason why we are not going to examine these important contributions in detail is that we want to keep this exposition to a reasonable length.
22. See Ward (1967, p. 19). Other authors are inclined to ascribe this to Taylor and Lange (see Dobb, 1939a, pp. 242–3).
23. This is clearly inferred from Barone's words (Barone, 1908, pp. 272–3 and 287–9): 'From what we have seen and demonstrated hitherto, it is obvious how fantastic those doctrines are which imagine that production in the collectivist regime would be ordered in a manner substantially different from that of "anarchist" production'.
24. According to Brus, Barone did not attempt to solve the problem of economic calculation under socialism; he rather reduced it *ad absurdum* by assuming that all economic decisions should be centrally directed (see Brus, 1964, pp. 179–80).
25. In short, one difference between Barone's and Taylor's approaches might be said to be the following: while Barone suggested that the Ministry of Production was to adjust the price of a commodity every time the price of the commodity concerned was higher or lower than its production cost, Taylor simply contended that prices were to be adjusted every time demand differed from supply.
26. For purposes of greater clarity, it is worth mentioning (though not of much consequence) that as neither Barone nor Taylor were collectivists, they did not 'assume' that the proposals contained in their analyses would ever be put to the test in practice. As mentioned above, Barone even dwelt on the reasons why the general economic equilibrium equations could not be solved *a priori* in a socialist state. Also see below.
27. Hoff's approach was different. While admitting that Taylor's 'trial and error' method had first been proposed by Barone, he maintained that both authors were representatives of the 'mathematical method', equally convinced that it rested with the planner to solve the general economic equilibrium equations on paper (Hoff, 1938, pp. 210–12). But as Hoff explicitly said that his classification of Taylor among the followers of the mathematical method was due to the latter's explicit statement that the planner was to note down the values of the production factors on 'arithmetic tables' (Hoff, 1938, p. 211), we understand that he misinterpreted Taylor's paper. Upon careful examination of the article we realize, in fact, that the 'arithmetic tables' were merely intended for noting down the values of the production factors during the trial and error procedure (see Taylor, 1929, pp. 51–3).

28. According to Z. Clark Dickinson, in the unpublished draft introduction to Taylor's 1929 article the socialist state is implicitly said to operate through state-owned enterprises and it would seem that these enterprises should be substantially free in their mutual dealings (see Dickinson, 1960, p. 51); but in the published version of his article this point is not mentioned.
29. As Lange re-examined this point some years later, we shall come back to it in greater detail in the chapters discussing Lange's approach.
30. It is worth mentioning here that Menger's classification of goods as 'primary' and 'secondary' is based on the fact that the value of the latter is *derived* from the use value of the former.
31. See, among others, Lange (1957, p. 337) and Landauer (1959, pp. 1639–40). For a critical review of this argument, which was raised, among others, by Dobb and Schumpeter, see Hayek (1945a, pp. 89–91).
32. Dobb judged Barone's contribution 'an abstract dogmatism' because by failing to explicitly raise the issue of the feasibility of socialism Barone had made the mistake of hypostatizing his concepts, that is, 'of regarding the postulated relations as the determining ones in any actual situation, instead of contingent and determined by other features; and hence of presuming too readily that they will apply to novel or imperfectly known situations' (Dobb, 1937, p. 130).
33. A widespread assumption among socialists was that the public ownership of production resources was incompatible with production for the market. Engels wrote that the appropriation of production means by society eliminates *ipso facto* the production of goods for the market and, hence, the dominion of the product over producers (see Engels, 1878); and years later, when Kautsky was still the repository of Marxist orthodoxy (and Engels's close collaborator), he once again stressed that commodity production and private ownership of capital goods were closely interdependent, because commodity production has as its prerequisite this kind of ownership and voids any attempt at eliminating it (see Kautsky, 1901). The project that was later unanimously passed at the 1891 Erfurt Congress had been written by Kautsky (also see A.G. Ricci's introduction, 1971, to the Italian translation of Kautsky's paper). When Bucharin dwelt at length on this point in a well-known work published no less than thirty years later, he argued that as spontaneity is ruled out and its place is consciously taken by a social regulator (planner), commodities lose their peculiarity and are turned into products, so that value as a category governing the equilibrium of the capitalistic mercantilist system is incompatible with a transition period in which the production of commodities disappears to a large extent and where there is no equilibrium at all (see Bucharin, 1920, pp. 146–7). Conversely, there are some who have argued (with no backup evidence) that in Marx's opinion commodities were not necessarily connected with property, but only with the work of private individuals operating independently of one another (see Chattopadhyay, 1972).
34. As observed by Wieser, natural value is a neutral phenomenon whose examination, whatever its result, will bring forth no evidence for or against socialism (see Wieser, 1889, p. 63).
35. Here is Crosland's opinion on this point: 'It is a mistake to think that profit, in the sense of a surplus over cost, has any special or unique connection with capitalism. On the contrary, it must be the rationale of business activity in any society, whether capitalist or socialist, which is growing and dynamic' (Crosland, 1956, p. 35). Also see, among

others, Koopmans, 1957, pp. 41–2 and 63–4; Peston, 1959, pp. 422–3; Koplin, 1963, pp. 135 ff.; Machlup, 1967.

36. Lunghini (1971, p. 14). Also see Hoff (1938, pp. 11–16).
37. The complexity of this problem is due to the fact that the categories which reappear in socialism with other names might not be recognized as being the old categories of capitalism. In two excellent books Lippi and Veca pointed out that Marx himself interpreted value as a *mixed* category, in part composed of elements typical of capitalism and in part of elements common to every other production activity; the same authors also mentioned that in value interpreted as the real social cost of the commodities produced Marx saw a magnitude naturally founded on production in general and, as such, bound to disappear with capitalism (see Lippi, 1976 and Veca, 1977, Chapters 4 and 5).
38. From among those who doubt this, see, for example, Mohun (1977, in particular p. 74).
39. Neo-classical economists have constantly propounded the thesis that the 'core problem of economics' is scarcity and that economics should consequently be concerned with making a possibly rational use of scarce resources (hence the name of praxeology, or study of 'the rationale behind choices') (see Wicksteed, 1933; Robbins, 1935b; Mises, 1949). As has often been observed, however, when economics is interpreted in this way, it ceases being a social science and becomes a logic-formal science like mathematics and logic. In such a case the truth of a statement is assumed to be given provided it does not contradict prior assumptions made, and no longer measured by reference to the extent to which it is suited to interpret the world in which we live (see Lange, 1958b, Chapter V; and also Therborn, 1974).
40. The principle of economic rationality is a historical product of the capitalist enterprise at least in the sense that its first full applications coincide with the development of capitalism. Before that time, economic activity aimed to achieve a multiplicity of ends besides minimizing costs and, developing in line with traditional patterns, it would pursue at least part of those aims by reiterating customary behaviours instead of rationally calculating costs and revenues (see Lange, 1958b, pp. 169–72 and 1964, pp. 47 ff. and, above all, Weber, 1922a, vol. I, Chapter II and Polanyi, 1944, Chapter IV).
41. See Dickinson (1933 and 1939); also see Lerner (1934).
42. As the theoretical point had already been solved by Barone, it is often maintained that Hayek was forced to adopt a 'secondary line of defence' (a phrase coined by Lange and borrowed by Dobb as well), so that he confined himself to arguing that socialism was unable to solve the problem of economic calculation *in practice*. Yet some authors find fault with this line of reasoning (see Rothbard, 1976, p. 68; Vaughn, 1981, p. xvii; and Temkin, 1989, pp. 189–200).
43. See Hayek (1935c, pp. 207 ff. and 1945a, pp. 83 ff.). As observed by Ward, it was Hayek's analysis of the problem of information that aroused most debate; and it is also interesting to note that the implications of information were first discussed in connection with the economics of socialism (see Ward, 1967, p. 25).
44. See Hayek (1935c, pp. 234–5). According to Ward, while Hayek's argument is all but convincing, it is none the less of great consequence because it emphasizes that changes in organization may result in changes in behaviour. Although this is a crucial point of the debate, it was seldom dealt with by the authors whose works we are examining here.
45. Let us mention here that Lavoie strongly objects to this interpretation (1985, introduction).
46. In Vaughn's opinion, however, Hayek can in no way be charged with ignoring the arguments of his adversaries (Taylor's argument that the system of general equilibrium equations should be solved, not on paper, but with recourse to the typical trial and error method of the market); rather it was the other participants in the debate who ignored Hayek's contributions (see Vaughn, 1980, p. 537).
47. As for Vaughn, for example, he termed Taylor's suggestion to use the 'trial and error' method as oversimplified and dogmatic (see Vaughn, 1981, p. xxii).

2. Socialism and market: Lange's contribution and Marxist theory

How disappointing are the fruits, now that we have acquired them, of the bright idea of reducing Economic Theory to a mathematical application of Bentham's Hedonistic calculation! (Keynes)

2.1 LANGE ON THE ECONOMICS OF SOCIALISM

As we proceed in our review of the socialist calculation debate, it is time to examine Lange's contribution. While there is no denying that the analysis of this Polish economist is the most famous of all,[1] we are going to show that it seems to have added very little to Barone's and Taylor's earlier propositions (see Schumpeter, 1942, p. 173).

There is general agreement that the notion of price is at the core of Lange's approach (see, for instance, Dobb, 1939a, pp. 242 ff.; Peterson, 1970, p. 396; Temkin, 1989, p. 201). Following on from Wicksteed, Lange identified two possible conceptualizations of price: the first and current notion which holds price to be the ratio at which two goods are exchanged in a market and a second, much wider notion, according to which prices are 'the terms at which the alternatives are offered' (see Lange, 1936–37, pp. 59–60). He argued that when handling the problem of allocating resources one must always and only interpret price in the latter meaning.[2]

One of the basic problems in economics is how to choose between different options. This problem can only be solved by referring to three kinds of data: (i) a scale of preferences to govern the relevant choices; (ii) the 'terms at which the alternatives are offered'; (iii) the quantity of production resources which is available. In a socialist order choices may be governed by two types of priorities: individual consumer preferences and, in Drewnowski's definition, 'State preferences' (see Drewnowski, 1961). Lange analysed both (although this seems to have often been overlooked): the information under (i), he wrote, can be fixed 'by the judgement of the authorities administering the economic system' (Lange, 1936–37, p. 60). The information in the third group may be just as well known in a socialist order as it is in a capitalist system. Consequently it remains to be established whether the managers of a socialist economic system can also have access to data of the second type.

At this point the aforementioned notion of price becomes a crucial element in deciding whether rational calculation is possible in a socialist order. Discussing the case which is central to Lange's approach, let us assume that both consumers and workers have full freedom of choice and that decisions concerning the allocation of resources will thus be based solely on consumer preferences. In what manner will equilibrium be reached within the system?

As happens in a capitalist regime, Lange wrote, equilibrium will be reached in two successive stages. Single individuals and firms will make their choices based, on the one hand, on the market prices of consumer goods or workers' services and, on the other, on the prices of capital goods as calculated by the Ministry of Production based on their respective scarcity indexes;[3] monitoring demand and supply, the Ministry will act in accordance with Walras's classical 'trial and error method' (*tâtonnement*) and will thus increase prices when demand exceeds supply and reduce them in the opposite event. And this will be enough to fix equilibrium prices.

Nevertheless this will not solve the problem, for it remains to be clarified what rationale firms will adopt in making their choices.

Ruling out that the choices of socialist business enterprises would be governed by the profit motive, Lange suggested that the planner should confine him/herself to laying down just a few rules: first, the rule that factors must be combined in such a way that the ratios between their respective marginal products equal the ratios between their respective prices; second, the rule ('the Lange and Lerner rule') that prices must constantly be equal to the marginal costs of the goods.

As is well known, the first of these also applies to capitalist firms and is an efficiency rule (the levelling of the weighted marginal products of the factors of production). As for the second, though likewise a maximum efficiency rule, it is only applicable to capitalist business enterprises in perfect competition models and not in monopolistic or oligopolistic markets. This means that the marginal utility of each item purchased (which in an equilibrium situation is equal to its price for each consumer) must reflect the marginal utility of the alternative satisfaction that is sacrificed (which in an equilibrium situation is equal to its marginal cost);[4] and the rule is a necessary corollary of both Lange's contention (or hypothesis) that consumers' choices deserve respect and his obvious assumption that the planner would endeavour to maximize the income (and hence the welfare) of society as a whole.[5]

2.2 LANGE'S RULE AND THE MAXIMIZATION OF WELFARE

In every treatise on welfare economics it is made clear that a system adopting the two rules illustrated above will allocate resources in the best possible manner and maximize the well-being of the whole community. Let us assume that the prices of single categories of resources are the same everywhere and that factors are allocated in such a way that the marginal revenue afforded by each of them (that is, the proceeds of the sale of the product obtained using the last unit of it) is equal everywhere to its price; in such a case, if the marginal revenue obtained from a given factor and its market price are divided by the number of units of each good which the last unit of the factor contributes to produce, then the levelling of the marginal productivity and price of a factor will also result in levelling the price and marginal cost of the factor in question. And this is exactly the aforementioned 'Lange and Lerner rule'.[6]

Hence this rule reflects the need that the marginal value product of each factor be always equal to its price.

In point of fact, Lange initially argued that the managers of socialist enterprises also had to observe the additional rule of balancing the price of a unit of a good with its average cost; but it was only after Lerner's well-grounded criticisms (1936, pp. 72–6) that he expressed his thought more clearly (see Lange, 1937, pp. 143–4). Although managers were to look to price/marginal cost levelling as their paramount rule in all circumstances, even when prices were lower than average cost, production activity could not be based solely on that rule, for managers were also required to decide which items of the older equipment were to be used and which newer items of equipment were to be produced in preference to others. Accordingly Lange propounded an additional rule to be observed by every industry as a whole and not by the single production unit, that is, the rule according to which the number of plants in all production sectors must be increased when prices exceed average cost, and vice versa.

Thus the price/average cost levelling rule is another basic rule of conduct in Lange's model – as Lange had anticipated right from the beginning. Its effect, like that of the free entry of new enterprises into a perfect competition market, is to determine the precise supply level of a given product that will minimize average production cost within an industry. But while the price/marginal cost levelling rule must govern the actions of the managers of individual enterprises, the price/average cost levelling rule must guide the actions of planners; and the Lange and Lerner rule will simultaneously minimize average production cost only when equilibrium is reached in the production sector concerned, that is, when price equals average cost.[7]

Consequently it is the parametrical function of prices, that is, the fact that prices are given, that makes it possible to allocate resources in a rational manner. Individuals and firms make their choices based on given prices, no matter if accounting prices or market prices; and as individuals buy consumer goods (which have a market) at their market prices, so firms requiring capital goods for their production processes will have to pay the accounting price fixed by the planner for these goods (which have no market).[8]

Instead of having to solve hundreds of thousands of equations in order to identify the equilibrium situation, all the planner has to do is to lay down a number of rules, monitor the trends of demand and supply in the single markets and adjust prices until demand and supply level out everywhere.[9]

2.3 FURTHER ASPECTS OF LANGE'S CONTRIBUTION

From the above it follows as a matter of course that the pricing mechanism suggested for a command economy is basically the market mechanism founded on competition. Firms are to a certain extent autonomous in making their choices and the rules imposed by the planner are those which capitalist enterprises operating within perfect competition markets adopt spontaneously. In other words, the rationale suggested by Lange is in fact that of perfect competition (which in orthodox economics has always been termed the 'ideal' mechanism).[10]

This explains Lange's contention that his model combined planning (see below) with a market mechanism even superior to that found in capitalist systems. In his model prices are given, so that firms can actually level out price with marginal cost as would happen in a perfect competitive system, while the real scenario of capitalism is characterized by so many market imperfections and monopolistic situations that the theorizations of the perfect competition ideal end up by being of interest only to the theoretician.

In a book which was published at the same time as Lange's but has now been almost completely forgotten, Hall clearly reached the conclusion (Hall, 1937) which is basically the stance of all those who argue that market socialism is to be compared with monopoly capitalism and not with a capitalist system founded on perfect competition (see note 8 before; Persky, 1989 and Stiglitz, 1994, p. 15).[11]

In the debate that followed, this particular merit of the Langean socialist model was somewhat scaled down. In a celebrated study analysing the extent of the losses involved in monopoly, Harberger showed that monopoly resulted, as a rule, in income transfers by which firms appropriated the losses incurred by consumers because of the higher price levels registered in monopolistic situations. Calculating the loss in efficiency caused by monopoly ('Harberger's triangles') he found that the aggregate net income lost by the community as a whole accounted for just a small percentage of the domestic product (see Harberger, 1954). This has obvious implications for the economic theory of socialism. If, in fact, monopoly merely redistributes income instead of producing low efficiency levels, then capitalism also has the means of remedying such effects: it does not necessarily require any anti-trust legislation and, obviously, there is no need to replace the capitalist enterprise with the Langean-style firm (see Stiglitz, 1994, pp. 116–17).

But this is not all, because the theory of 'contestable markets' enunciated by Baumol and others has strongly argued that, as a rule, monopolies do not raise prices. According to this theory the competition *potential* is much more important than actual competition, because when pricing his/her products each monopolist will have to endeavour to avoid giving other firms the opportunity to enter the sector in which he/she operates; and, as a rule, this means that a monopolist will have to fix his/her price at average cost level, since at any higher level possible competitors might find it convenient to manufacture the commodity in question (see Baumol, 1982 and Baumol, Panzar and Willig, 1982).

However, the contestable market theory is also open to some criticism (see, among others, Salop, 1979; Dasgupta and Stiglitz, 1988; and Stiglitz, 1994, pp. 119–38).

Lange also addressed the problems of the interest rate and optimal accumulation rate. Pointing out that the interest rate is a price and, as such, is determined by supply and demand, he argued that in the short run the interest rate is determined by the supply of and demand for saving;[12] the problem that emerges in the long run, however, is just how much capital should be accumulated. As investment resources are earmarked before income is distributed among workers, accumulation is a task the state reserves for itself; consequently the Central Planning Board is free to fix the accumulation rate *at its own discretion*, that is, regardless of the community's propensity to save.

In view of the above, Lange suggested that the planner should accumulate capital until the net marginal productivity of capital was null (that is, up to the moment when a further increase in capital would no longer bring about an increase in output and the economic system might consequently be said to be 'saturated' with capital; see Lange, 1936–37, pp. 83–5).[13]

The high accumulation rates recommended by Lange would obviously entail substantially lower consumption levels and curtail the principle of 'consumer sovereignty'. As a matter of fact this difficulty might be side-stepped by leaving the choice of the accumulation rate with single individuals, but this – argued Lange – 'is scarcely compatible with the organization of a socialist order'.[14]

When dealing with the problem of external economies and the difference between private and social costs, Lange pointed out an additional advantage of a socialist economic order compared to a capitalistic one: in the former, social accounting can also account for external economies and diseconomies which have no place in the accounting of capitalistic firms.[15]

Another point which Lange examined was the distribution of the 'social dividend', that is, of the yield of state-owned capital goods. Here he clung to the notion of optimal income distribution, which is achieved when the value of the marginal product of labour in all activities and occupations equals (though Lange mistakenly said 'is proportional to') the marginal disutility of labour and can be brought about by distributing the social dividend in proportion to wage rates (see Lange, 1936, pp. 64–5). We shall come back to this point later on.

2.4 A FIRST COMMENT ON LANGE'S ANALYSIS

The first observation to be made on Lange's model is that it has always been interpreted as a decentralization model.[16] This strikes us as all the more surprising because, as mentioned before, Lange analysed both the case in which individuals have freedom of choice and the opposite case with centrally directed decision-making.

> The procedure of trial and error described is also applicable to a socialist system where freedom of choice in consumption and freedom of choice of occupation are non-existent and where the allocation of resources, instead of being directed by the preferences of consumers, is directed by the aims and valuations of the bureaucracy in charge of the administration of the economic system. In such a system also rational economic accounting is possible, only that the accounting reflects the preferences of the bureaucrats in the central Planning Board instead of those of the consumers.[17]

There is no denying that in Lange's view a system without freedom of choice in consumption and occupation was incompatible with socialism, but later on he clarified that 'freedom of choice in consumption does not imply that production is actually guided by the choices of consumers' (Lange, 1936–37, pp. 95–6). One may indeed imagine a system in which the scale of output for each commodity is fixed by the planner, while prices are fixed at the level at which demand equals supply. In such a situation, Lange argued, the system can be rationally organized only by fixing a double set of commodities prices: resources will be distributed among competing uses based on a set of prices fixed by the planner so that the relevant scales of output will allow each commodity to be produced at minimum cost and by employing all factors to

the full, while the second set of prices will have to be defined in such a way that demand will equal supply levels.[18]

Concerning this point, however, there are some who contend that when Lange's model is interpreted as a model with decentralized choices it leaves no scope for planning. Bergson, for example, strongly argued that the debate we are analysing produced at least one finding: the recommendation that the Central Planning Board should merely set up an administrative department in charge of the pricing process and leave it up to the play of demand and supply to determine prices in the market. What role, he wondered, does this leave for planning? (see Bergson, 1948, pp. 436–7; also see Dobb, 1939a, pp. 243–4).

In Lange's opinion, the Central Planning Board takes the place of the market. 'It establishes the rules for combining factors of production and fixing the scale of output of a plant, for determining the output of an industry, for the allocation of resources and for the parametric use of prices in accountability. Finally, it fixes the prices so as to balance the quantity supplied and demanded of each commodity. It follows that a substitution of planning for the functions of the market is quite possible and workable' (see Lange, 1936–37, p. 83).

But one might ask what this substitution of the market with planning adds up to.[19] According to some, Lange's model with decentralization deprives the Central Planning Board of all its functions, because prices are determined by the demand and supply mechanism and this, being determined by the behaviours of enterprises and consumers, is beyond the Central Planning Board's control. The latter's only function with regard to pricing, they maintain, is to announce what has happened in the market.[20]

To accept this objection, however, would no doubt mean to take an extreme view.[21] First of all, one would fail to acknowledge the crucial functions the central planning authorities perform in Lange's model by fixing the accumulation rate and the rules that are to govern income distribution,[22] that is, tasks closely linked to the essence of socialist planning and with an obvious impact on pricing, and one would also disregard the fact that in his/her pricing process the planner is to account for social costs and benefits which have no place in the pricing processes of capitalistic firms (see Brus, 1964, pp. 32–3).[23]

Second, let us mention that these criticisms seem to disregard both the circumstance that the price/marginal cost levelling rule is not a market rule (because perfect competition does not exist), but a rule by which the planner directs the behaviour of socialist firms.[24]

Despite all this, the above observations are anything but ungrounded. When Lange's model is interpreted as a decentralized model, it does not leave the search for equilibrium prices to the calculations of planners, but to the Walrasian approach of *tâtonnement* or to public auction, that is, to the typical market mechanism.[25]

This fact is important considering that Lange's article dates back to 1936–37, when the theory of planning had barely been conceptualized and the use of computers was but in its teething stages. At that time no one could ignore Robbins's (and Hayek's) celebrated objection that no planner would ever be in a position to solve the 'millions of equations' that would be required to describe an economic system (see Pareto, 1927, pp. 233–4; Robbins, 1935a, p. 151; Hayek, 1935c, p. 212, 1940, pp. 181–2; Lange, 1936–37, pp. 87–8); and Lange could not assume that any planner would be able to solve the equations underlying his model.

And this brings us to the crux of the issue. In our opinion the greatest merit of Lange's contribution lies in reproposing Taylor's thesis that the planner need not solve any complex system of equations at the desk, because equilibrium prices can be fixed by recourse to the 'trial and error' method typically adopted in market systems. Let us point out that this was just Lange's answer to Robbins's and Hayek's criticisms. While Lange may be criticized for not attributing this idea to Taylor, he expressed his thought on this subject very clearly (see Vaughn, 1980, p. 541). Nevertheless it was not always correctly understood.

But there is more than that: it is worth adding that in Lange's 1936–37 model the prices of consumer goods and wage rates were determined *freely* by the market, that is, fixed by individual firms, not by the planner. This was explicitly acknowledged even by Hayek (Hayek, 1940, p. 190; also see, among others, Lavoie, 1985, p. 121), but was then almost completely forgotten. Lange stated this clearly when he wrote: 'in the socialist system as described we have a genuine market (in the institutional sense of the word) for consumers' goods and for the services of labor' (see Lange, 1936–37, p. 73); but he failed to solve one major issue: the contradiction inherent in the fact that when pricing is left to single firms, one can hardly expect that these will not yield to the temptation of adopting the pricing procedure of capitalist *price-makers* and thus balance, not marginal cost and price, but marginal cost and marginal revenue. But if firms balance marginal cost and marginal revenue, they cannot by definition observe the Lange and Lerner rule which is at the basis of Lange's analysis (see, for example, Vaughn, 1980, p. 548, and Nove, 1983, p. 119).[26]

2.5 MARXIST CRITICISMS OF LANGE'S CONTRIBUTION

Lange's contribution attracted much greater attention than either Barone's or Taylor's analyses and during the debate that followed several important objections against market socialism were raised. Two of these objections are of a very general nature and will be analysed in this and the following sections.

The first major criticism of the models of market socialism has been repeated for more than fifty years by a number of Marxist economists[27] who based their objections on:

- the fact that Lange (like Barone) set out to show that such fundamental categories of political economy as prices, wages, rents and interest will surface in a socialist system as soon as the issue of rationally allocating resources is posed;
- the emphasis Lange placed on a decentralized model which seems to leave little scope for planning;
- the fact that Lange suggested some recourse to the market even for his centralized model.

These economists strongly criticized market socialism and the models proposed by Barone, Taylor and Lange because they judged them incompatible with Marxist thought and, above all, because they feared that market socialism would neither bring about fraternity or equality nor solve the serious problems which capitalism creates and socialism is to do away with;[28] and until the actual collapse of the Soviet system Marxist economists continued to share the view that the system termed 'market socialism' would not improve things any more than capitalism could, so much so that some of them actually termed the Langean model of socialism as 'capitalism without capitalists'.

As early as 1937 Dobb argued that planning amounted to nothing if it did not involve the abolition of autonomous individual decisions (Dobb, 1937). Writing that the awareness that price was not a universal category was crucial to understanding in what ways socialism differed from a form of capitalism without capitalists, Samir Amin maintained that to contend that an advanced social system should indulge in economic accounting of the kind practised in capitalism reflected a lack of imagination born of economic alienation (see Amin, 1972, p. 82 and note 60).[29]

Without distinguishing between the analyses of different authors (some of which may in part not be open to such criticism), let us point out that what Marxist authors reject in all 'market socialism' models is that they seem to disregard the 'anarchical', distorting and unjust nature of the market (with investment concentrated in already industrialized areas, higher returns on capital where capital is abundant and a competitive mechanism rewarding the strong, regardless of the needs of justice), the crises from underconsumption and other imbalances of market-oriented production and the inability of the market to provide employment to those in search of jobs. An equally important objection of many Marxists is that 'consumer sovereignty' is all but absolute in a market system, since consumption is largely conditioned by the choices of enterprises. Lastly, in the opinion of Marxists the fact that the market mechanism determines commodities to be manufactured with a view to their exchange value rather than to their use value is a distortion of the 'natural' order of things, promotes individualism[30] and is the prime cause of humankind's alienation.[31]

As a matter of fact, before deciding in what way any form of market socialism may provide a satisfactory answer to the problems raised one would have to analyse in depth each of these criticisms,[32] but such an undertaking lies outside the scope of our analysis.[33]

2.6 NEO-RICARDIAN OBJECTIONS

A second major criticism of the models of Barone, Taylor and Lange to be analysed here came from 'Neo-Ricardian' theorists. It has already been mentioned that Lange's is a marginalistic approach with marginalist solutions such as the levelling of marginal cost and price. But as marginal theory is part of neo-classical economics and modern economic thought (in particular the debate between the two Cambridge schools) has pointed to deep-rooted errors behind neo-classical economic theory, in the opinion of its most radical critics Lange's approach is to be rejected as being marred by the serious faults of all neo-classical approaches.[34]

However, as the serious strictures of Robinson, Sraffa, Garegnani, Kaldor and Pasinetti (to mention just major authors) have shown that the parts of neo-classical economic thought to be discarded are the theory of capital and distribution originating from Clark or Wicksell and perhaps even every theory of long-run distribution[35], but not the theory of general economic equilibrium of Walras, Hicks, Debreu, Arrow and Hahn[36] or the traditional theory of the firm, this kind of criticism is now generally considered to be unconvincing by mainstreem economics.

None the less, as the real implications of Neo-Ricardian criticisms are still the object of debate and their radical tone has resulted in the emergence of two opposed schools of thought,[37] the contention that this criticism is applicable to all neo-classical macroeconomic theories requiring the use of the macroeconomic production function, but not to general equilibrium theory or microeconomics, can be viewed as a sort of neo-classical self-defence.[38] And if this holds true, then Barone's, Taylor's and Lange's contributions also come in for the aforementioned Neo-Ricardian criticisms.[39]

2.7 CONTROVERSIAL ISSUES IN LANGE'S ANALYSIS

If Walras's general economic equilibrium theory stands the test of the various criticisms aimed at it not only by Neo-Ricardians (for instance by Kornai[40] or by Kaldor, who labelled equilibrium theory 'irrelevant'), it provides a valid basis for constructing a model of the capitalist economic and social order which, as it becomes richer and more sophisticated and extricates itself from the constraints of the reductive methods of certain neo-classical analysis, may help us to understand the world in which we live.[41]

As far as we know, only two propositions of Lange's are to be rejected because they fit within that part of neo-classical theory against which serious criticisms have been dealt out: his propositions concerning the interest rate and optimal accumulation rate (which were mentioned above in order to provide a full picture of the subject).

As for other possible criticisms of Lange's model, it is well known that even a system in which the number of equations equals the number of the unknowns will not always have one and only one meaningful solution, while an overdetermined model or a model with more than one solution will make planning impossible. We shall come back to this point in Section 10.

Another problem to be considered was first raised by Arrow and Hurwicz (1960). Analysing the problem of the stability of the system, they pointed out that equilibrium could prove unattainable in practice even in a model with only one solution provided any departures from it did not set in motion forces tending to re-establish it; and in this connection it is worth noting that when the solutions have to be reached with the trial and error method, this problem will arise not only in a decentralized model, but also in the model with central planning.[42]

As for Lange, he assumed that the Walrasian *tâtonnement* process he had described was stable. He was suggesting a socialist order in which the structures used for the planning function had been taken over from the previous capitalist order (and adjusted to fresh needs with no difficulty); and in all probability he did not address the problem of stability because he assumed that the market mechanism would essentially work in the same manner both in socialism and in capitalism and the relative stability of the capitalistic price system encouraged him to anticipate that prices would be fairly stable also in his model of socialism.[43] But this assumption is wide open to criticism. Having opted for Walras's conceptual framework, Lange ought to have analysed the stability of Walras's model in any case (see Bliss, 1972, p. 99, and Lavoie, 1985, p. 96). Studies on this issue have indeed suggested that the functions for which a competitive equilibrium can be proved are barely realistic.[44] (The problem of stability will be dealt with in greater detail in the closing section of this chapter.)

The main defect of Lange's model, however, is that it fails to tackle the problem of incentives. Who would be able to vouchsafe that firms will actually balance out marginal cost and price in spite of the difficulty involved in calculating marginal costs especially in a multiproduct firm? Are we to assume that state officers will visit firms to check that prices are equal to marginal cost everywhere? It would not even be possible to appraise a firm's efficiency based on indicators of success. As Langean firms are not called upon to maximize either profit or any other variables, how would state officers establish if a firm is actually observing the rules imposed upon it? These are the reasons why today there is general consensus that Lange's model is certainly of great theoretical interest, but cannot be seriously proposed as a practicable alternative to capitalism (see, for example, Yunker, 1992, pp. 55–6). These kinds of criticisms will be discussed at various stages further on.

2.8 DOBB'S CRITICAL REVIEW OF LANGE'S THEORY

In a number of articles Dobb strongly objected to the idea of competitive pricing in a socialist system. Some of his objections echoed the usual, though important criticisms that economic theorists, including non-socialists, had long been dealing out against markets. Being convinced that an institution such as the market would preserve all its defects even in a socialist order, Dobb termed market economy an 'anarchical' system in which individuals make their decisions unaware of what others are doing and must consequently face the problems entailed in such ignorance. Setting out from the fact that in a market economy all decisions are to be made by such small units as single firms, he thought it impossible for a market economy to correct all the shortcomings inherent in the bulk of decisions made and, in particular, to eliminate such all-important aspects as 'external economies'. He also objected to conducting the debate entirely by reference to a static economic order, because this involved disregarding the effects of dynamic changes which could throw some light on the failures of a market system. Terming investment decisions, in particular those made in the sectors of capital goods, 'an act of faith *par excellence*', he also argued that decisions left to the market, where people make them unaware of what others are doing, are both arbitrary and short-sighted[45] because they involve the systematic underrating of future needs and thus a tendency towards underinvestment.[46]

Dobb also contended that static analyses lead us to overlook an important efficiency problem such as the increase in global productivity. Accordingly he maintained that economists were excessively concerned with *marginal* occurrences incidental to the transfer of resources from one sector to another, because although the transfer of resources greatly adds to their efficiency, such greater efficiency will only concern the marginal units transferred, that is, a small proportion of the aggregate resources. In other words, if an economic order suffering a loss because of its non-marginalistic use of resources manages to grow more rapidly than another by prioritizing investment, then it is that system, and not the other, that will eventually have available a greater quantity of goods.[47]

Mainstream writers of free-market economics usually counter these criticisms by arguing that the market is the best possible democratic institution one can imagine. As in parliamentary democracy individuals can give voice to their political preferences by simply placing their ballot papers in an urn, they object, so the needs of consumers as expressed in the market reflect their votes in the field of economic choices. But Dobb in turn countered this argument by pointing out that advertising and other notorious consumer-persuasion mechanisms were sure to reduce such freedom of choice to a bare illusion and that a system granting a thousand votes to a person owning one thousand pounds and just ten votes to a person owning just ten pounds was indeed a poor democratic order.[48]

An objection of even greater consequence is the contention that within a changing and developing environment it is not correct to assume consumer preferences as given, for it is impossible to imagine a process of growth which is not accompanied by radical changes in human needs. Since consumers and consumer preferences are determined by society, Dobb wrote, the very moment political decision-makers make far-reaching resolutions concerning the kind of economic growth that is to be pursued, they also influence the ever-changing spectrum of consumer needs. And he added that this is indeed right, because decisions concerning the kinds of goods to be produced are, at least partially, political actions and politicians must not abdicate their responsibilities in decision-making (see Dobb, 1953, pp. 78 ff.).

Consequently Dobb found fault with the mainstream theory according to which consumer preferences as reflected in choices made in the market were the only (see, for instance, Baumol, 1965, pp. 28–9) or at least the main factor to be considered. Having pointed out the inability of the market to meet collective needs, he emphasized that the problem was not simply to satisfy consumer needs as reflected in individual choices, but above all to reconcile individual choices with collective ones. The alternative to private choices is not necessarily the authoritarian regimentation of consumers, he wrote, because even in politics individuals delegate most of their decisions to their representatives and those asking a doctor to prescribe them suitable diets do not feel that by doing so they have renounced their freedom. Many choices concerning commodities to be produced are 'expert decisions' and it is not surprising that the community will rely on planners to make them.[49] It goes without saying, he stressed, that the market is in many respects an imperfect institution and that there is general agreement among economists that its choices need to be reconsidered in many respects (see Dobb, 1953, pp. 69–74 and 84–6).

He wrote:

> The reasons why even adult desires for things may bear no very close relation to the welfare derived from them are numerous: in some cases because consumers lack the knowledge to discriminate; because their experience of alternatives is a limited one (e.g. in the cases of alternative diets or of forms of entertainment); because they are unreflective and easily moved by immediate or superficial stimuli (e.g. by the name or wrapping on the outside or the shine of gilt on a bauble;) or simply because they are gullible. Moreover, human wants may lie at different levels of consciousness, and people may be only dimly aware of some of them. If one's hedonistic calculus admits of *qualitative* differences of satisfaction, in the sense of higher satisfaction (good music) and lower satisfactions (American crooner), then one will regard the satisfaction of desires as welfare-yielding only in the degree that desires are educated, and one will detect a 'Gresham's law' of taste at work in the so-called consumers' sovereignty of a commercialized society. (emphasis in the original)[50]

The distribution of income is another issue which should be examined here. Despite wide consensus on the idea that in many cases welfare can only be increased by deliberately changing the initial distribution of assets, this is usually considered as given in these analyses of the economic theory of socialism. But as we read in any works on welfare economics (see, for example, Little, 1957, pp. 51 ff.; Graaf, 1957, Chapter V; Dobb, 1969, Chapter X) in equilibrium there is not a single optimum situation because Paretian optima vary with the initial distribution of resources.

The relatively irrational behaviour of consumers, the degree to which their choices are conditioned, the dependence of demand on income distribution and the wide range of possible *optimality* patterns make us doubt whether it is really worthwhile using such sophisticated instruments as marginal analysis in examining a problem which at best will find an approximate solution. When one has in mind an indistinct, rather than precise target, observed Dobb, it seems useless to expend much time and mental effort on inventing ever more perfect instruments for the analysis of this target. It is enough to use much more elementary instruments to correct even the widest departures from what, according to any definition, may be called a desirable distribution pattern.[51]

2.9 A COMMENT ON DOBB'S CRITICISMS

Dobb's conclusion is that the alternative to capitalism is not market socialism but centralized planning. On closer analysis, in fact, his criticisms of the

market turn out to be arguments against decentralization and for the supremacy of politics over economics. With the passing of the years, however, he changed his mind with respect to the decentralization-versus-centralization option.[52] In an article dating back to 1939 he maintained that investment decisions had to be centrally directed, while other decisions, for instance concerning capacity utilization or the product mix to be produced, could be decentralized at least under given circumstances (see Dobb, 1939b, pp. 53–5).

As Lange tried to reconcile planning with the market while Dobb saw them as conflicting, the latter's analysis would seem to be diametrically opposed to Lange's at least in its initial formulation. Like Mises, Lange assumed the bulk of available resources as given and set out to criticize the contention that only the capitalistic market mechanism was able to allocate those resources in a rational manner. Dobb, instead, raised the *dynamic* problem of increasing available resources in time[53] and prioritized planning over the market on the assumption that a planned economy would better solve the issue of accumulation.[54] In a market economy, he wrote (as mentioned above), investment decisions are made ignoring the simultaneous decisions of others and coordinated only *ex post* through price adjustments; but when firms are fairly large sized in proportion to the market and technological progress determines resources to be invested in large-size capital goods with a long useful life, any choice made without knowing what others are doing becomes thoroughly irrational and results in waste.[55] In a planned economy, decisions are instead coordinated *ex ante* and investments can be selected by weighing all present and future circumstances which may appear important.[56]

When Dobb propounded his plan-versus-market opposition, he had in essence accepted Mises' view that planning cannot solve the problems involved in economic calculation (see Lerner, 1934) and it was in an attempt to side-step this view that he denied the relevance of these problems in a dynamic environment. But this is precisely the weakest point of his approach, because as mentioned above the problem of economic calculation is the problem of using scarce resources in a rational manner and it will consequently arise both in static and in dynamic environments as long as scarcity persists.

Efficient accumulation requires solving the problems involved in allocating available resources. To begin with, one will have to define the best possible rate of investment by deciding whether to increase the production of capital goods or consumer goods. At that point one will have to select the investments to be financed, that is, decide how to allocate resources among different capital goods that can be produced. But both these decisions are in any case linked to the rational use of scarce resources (see Napoleoni, 1963, pp. 155 ff.). Moreover, once the extent of the resources to be allocated to consumer goods has been established, one will also have to solve the problem of using them in the most efficient manner.

In the foregoing we have seen that Dobb's analysis, though interesting in many respects, is not entirely devoid of weaknesses. And this is the reason why we prefer the approach of Napoleoni and others who have tried to reconcile Dobb's arguments on the superiority of planning over the market with the main ideas of Lange's analysis.

When assessing Dobb's overall achievement, we must add that his approach to the decentralization-versus-centralization choice changed over the years. As mentioned before, in a 1939 article he admitted that only investment decisions required centralized decision-making, while decisions concerning plant capacity utilization and product mixes could be decentralized at least in certain circumstances. Later on, he wrote that both the centralized bureaucratic structure of the Soviet model and the fully decentralized model of a system of labour management – though certainly representing two alternative forms of socialism – may both be in conflict with some of the basic requirements of socialism. The decisions and options of bureaucrats in a centralized model will often conflict with the interests of the bulk of producers, while labour management may be an obstacle to planning and may result in a medley of sectorial interests; both forms, if carried to extremes, may impede the transition to a superior stage of socialism.

As can be inferred from his latest writings on this topic, in Dobb's opinion plan and market are to be *combined* in manners difficult to define once and for all in abstract terms. The experience in socialist countries and the partial success of some reforms that were launched in the 1960s, he wrote, show that it is impossible to trace a clear-cut line between decisions which must be centrally directed and those which can be left to firms, but that at least some principles can be laid down (see Dobb, 1969, pp. 125 ff.).

If this is Dobb's latest assessment of the subject, what remains to be pointed out is that upon examining Dobb's successive stances on this point, his fiercest critics were especially surprised that one of the most renowned international Marxist theorists did not voice any serious criticisms of the market comparable to those found in Marx's writings. According to these critics, Dobb's arguments against the market and for planning were barely more radical than those of a contemporary mainstream economist describing capitalist production as 'anarchical' or 'consumer sovereignty' as myth.[57] His objection to the static nature of orthodox economic analyses of the allocation of resources is certainly in line with a criticism of capitalism, that is, its inability to develop production forces, which even Marxists are prepared to reckon the most effective one ever raised (see, among others, Cox, 1964, pp. 238 ff.; Malrieu, 1973, vol. I, pp. 111 ff., vol. II, p. 102); but on closer analysis it also fails to get to the heart of the matter.

More explicitly, the greatest fault the severest critics blame on this celebrated English economist is that his objections are only two of the many criticisms

that can be raised against the market and were also voiced by mainstream economists: (i) the scant scope of planning within a true market economy, with the obvious corollary of the limited and distorting nature of the choices governing production for the market; and (ii) the conditionings which influence consumer spending in a market economy. In particular the critics blamed Dobb for making no mention of Marx's basic objection against capitalistic economics and the market in general: the statement that by producing for the sake of the exchange value – not the use value – of goods, capitalism distorts the 'natural' order of things (which wants goods to be produced for their use value), alienates and impoverishes man and ends up by destroying his culture (see, however, Dobb, 1933, pp. 36–41, 1935, 1939a).

It goes without saying that Dobb's overall approach reveals that he was a man of his time: a Marxist of the Third International unwilling to criticize the policies of the official communist parties[58] which at that time were upholding bureaucratic and centralized planning in the USSR without mentioning what role the market was to play in it (and which, at a later point in time, actually accepted the rationale of the market in full). But this is exactly the reason why we think that Dobb's thought must be thoroughly illustrated.[59]

2.10 THE RELEVANCE OF DOBB'S CONTRIBUTION

Dobb's argument that in a capitalistic system investment choices may prove inefficient because they are coordinated only *ex post* is such a crucial aspect of his contribution as to deserve further comment.

As Stiglitz pointed out, the growing confidence in market socialism observed in more recent years can be traced back to two basic findings of economic theory. The first and more important of these concerns investment theory. In Stiglitz's opinion, one of the core assumptions of general economic equilibrium theory, that is, the standard model to which mainstream economists refer today when explaining economic reality (and the one from which the theoretical confidence in the efficient working of a market economy stems), is the existence of a complete set of markets which should include numerous future markets which do not exist in reality. While this is a crucial assumption in justifying investment decisions made in accordance with neo-classical efficiency criteria, it is obviously far removed from reality. In point of fact, there is no such thing as a complete set of future markets and this is the reason why investment choices may be locally efficient, but will fail to bring about an efficiently organized economic order in the long run (see Stiglitz, 1993, pp. 23–4 and 1994, pp. 16–18).

The earliest important findings on this subject go back to 1966. In that year Hahn showed that as soon as the main hypothesis underlying Solow's model of growth, that is, the existence of only one capital good, is dropped, (i) it will often be impossible to identify a precise growth path and (ii) growth will not always be stable because not all growth paths will converge towards the equilibrium path. In other words, in models with more than one capital good the absence of a single temporary equilibrium situation raises serious problems: and there may be more than one equilibrium path even when initial expectations are given. Second, even when there is only one growth path towards equilibrium there will be a wide spectrum of starting conditions and parametrical values for which the system does not converge towards balanced growth.

The former finding is associated with perfect competition, a model which by definition makes it impossible to establish in what quantities single capital goods will have to be produced. In perfect competition, in fact, single firms are in no way constrained by demand and consequently do not earn lower rates of return if they boost investment.

No such problem would obviously arise in a socialist economy, because there investments are centrally directed and, consequently, coordinated *ex ante*.

The second finding is due to the fact that investments will necessarily be affected by expectations concerning the relative prices of capital goods in the future and that for each different set of expectations there will be a precise set of investments assumed to be profitable. If the expectations are realized in practice, each investment mix will determine a different growth path. For each situation, therefore, there is only a limited set of expectations that will make the system converge towards balanced growth.

Pointing out that growth paths are indeterminate and unstable, Shell and Stiglitz (1967) also discussed the impact that different market structures may have on them. Setting out from a number of assumptions, they showed that no mechanism can guarantee a choice of prices that will prevent expectations made today from being proved wrong at some future date, and they also proved that, when existing capital goods only have spot markets but no future markets, the path converging towards the balanced growth path is the one along which expectations are always realized.[60]

These and other findings bring us back to Stiglitz's conclusion quoted right at the beginning of this section: when private investment decisions prove inefficient in the long run, Dobb's emphasis on the need to plan investments acquires greater momentum.[61] As is well known, there is general agreement that the benefits society draws from investment may either exceed or, conversely, fall short of the benefit accruing to a private investor (Krugman, 1994, p. 152). Yet this is an aspect of socialism we are not going to discuss in any further detail, because if the above holds true, it is also true that allocating

capital among several competing uses is a difficult task which the planner would probably not be able to carry out (see Stiglitz, 1993, pp. 32–3).

NOTE

1. See Lange (1936–37), as reprinted with slight changes in Lippincott (1938a). The best review and discussion of Lange's model is found in Heal (1973, pp. 77–118). Lange's earliest theories on the economics of socialism were printed in a book he wrote together with Breit in 1934 (see Chilosi, 1986, pp. 236–7).
2. As observed by Vaughn and Hoff, the reference to Wicksteed is completely out of place and is due to a misinterpretation of the thought of this author (see Vaughn, 1980, pp. xxii–xxiii and Hoff, 1938, pp. 213–15).
3. As for the aforementioned two notions of price, according to Lange 'market prices' are the exchange ratios that the Minister may fix for consumer goods *in a market*, while 'accounting prices' are the prices that reflect 'the terms at which the alternatives are offered', as happens for goods *without a market*, for example for capital goods (see Lange, 1936–37, pp. 59–61). Let us state right now that the assumption (at the basis of Mises' criticism) that a collectivist economy with nationalized production resources cannot have a market for capital goods need not be accepted (as Lange does), because capital goods, though barred from sale, may be loaned for use to the highest bidders. And this means that the *services* performed by capital goods (that is, what really counts) *can be sold* within a market proper (see Peterson, 1970, p. 397, note). On closer analysis, therefore, the two categories of prices used by Lange are found to coincide. Also see further on.
4. The cost of an item can always be interpreted as its opportunity cost, that is, as the sacrifice made because one cannot simultaneously produce two different commodities.
5. A situation of 'maximum welfare' is a situation in which it is impossible to make one individual better off without making at least one individual worse off and is termed 'Paretian optimality'. An optimum of this kind is reached when it is no longer possible to produce a greater quantity of any single commodity without reducing the quantity to be produced of at least one other commodity and when it is no longer possible for two individuals to exchange goods in such a way as to make one better off without, at the same time, making the other worse off.
6. The rule that marginal cost and price must be equal if the welfare of a community as a whole is to be maximized is the central assumption of a well-known book by Lerner (Lerner, 1944). At the beginning of this book the author admits that he once thought that a totally collectivized economy was an ideal system because in such a system the strict application of this rule – in his opinion the most important rule for maximizing social welfare – was indeed practicable. He then adds that he changed his mind because the events in Russia and Germany led him to think that collectivism was a danger to democracy. In his opinion, however, the price/marginal cost levelling rule was none the less the prime rule in judging the organization of a 'controlled economy', that is, the system he eventually prioritized and discussed in the main body of his work. On the intellectual development of Lerner, in particular his approach to the economic theory of socialism and the celebrated rule named after him, also see Lerner (1977).
7. In a 1936 article Durbin departed from Lange in recommending different rules of conduct for socialist businesses. According to Durbin, using the equipment they had

available, socialist firms were to produce the maximum possible quantity of a product compatible with normal profit levels, that is, the quantity at which *average* cost (not marginal cost) would equal price. In cases in which average cost was always found to exceed price, the production volume of an item was to be the one at which its *marginal* cost would equal its price (see Durbin, 1936, p. 686). Rejecting Durbin's proposal, Lerner restated his thesis by emphasizing that the marginal cost/price levelling rule was to be observed in any case (see Lerner, 1937). In a later article Durbin in part accepted Lerner's criticism (see Durbin, 1947). For a different interpretation of Durbin's article, see Hoff, 1938, pp. 224–33.

8. Summing up, the planner achieves a rational allocation of resources provided he/she acts as a Walrasian auctioneer: so something alike to perfect competition capitalism (market socialism) is seen as the alternative to monopoly capitalism (see Meade, 1966, Chapters 13–15).
9. In Bergson's view Lange was assumed to have satisfactorily met Mises' challenge because he had demonstrated that when solving the problem of economic calculation the planner was obliged neither to concern him/herself with the technologies of firms, nor to solve 'hundreds of thousands' of equations (see Bergson, 1948, pp. 432 ff., and Foss, 1993, pp. 151–2). As mentioned above, however, this finding must actually be traced back to Taylor.
10. In point of fact Lange suggested that the socialist planner was to 'imitate' perfect competition (see Schumpeter, 1942, pp. 183–4). Surprising though this may sound, it may be explained, as Koopmans, Arrow and Debreu have done, by pointing out that a Paretian optimum always corresponds to a perfect competitive equilibrium (see Arrow, 1951; Debreu, 1951; Bliss, 1972, pp. 90–91; Arrow, 1974, pp. 263–5).
11. As Lange was writing in a period when fascist governments (which Marxist theory associates with monopolistic power and imperialism) were in power in major capitalist countries, in essence he intended socialism to achieve what capitalism was not in a position to do: to protect and increase competition and democracy (see Kowalick, 1994, p. x). In Lange's words, 'only a socialist economy can fully satisfy the claim made by many economists with regard to the achievements of free competition' (Lange, 1936–37, p. 107).
12. In Lange's view, the interest rate is one of the cost elements to be considered in every production process.
13. Writing during the Great Depression, when economists were convinced that investment opportunities were dwindling everywhere, Lange certainly believed that 'the marginal productivity of capital' would reach the null-point in just a few years, that is, with just a slight increase in capital accumulation. Today economists are inclined to think that a system with fairly stable wage rates offers a wide range of ever new investment opportunities. But at this point it is worth mentioning that Lange's analysis is vitiated by his acceptance of the neo-classical distribution theory which Neo-Ricardian criticism has rejected in its entirety.
14. See Lange (1936–37, p. 85). As for Barone, he maintained that the optimal accumulation rate was the rate at which investment equals the voluntary savings of individuals (see Barone, 1908, paras 31, 37 and 45). On the relationship between consumer sovereignty and the choice of the accumulation rate in Lange's model, see Lerner (1936, pp. 73–6).
15. Lange's ideas on all the issues we have been reviewing here changed with the passing of years. For his more recent views, see Lange (1958a, 1958b, 1962b, 1970) and the observations that will follow further on.
16. See, for instance, Sweezy (1949, p. 233); Dobb (1953, pp. 57–8); Napoleoni (1963, pp. 153–4); Dobb (1969, pp. 186–7); Abdel-Fadil (1975, pp. 129 ff.). An exception is Heal (1973).

17. See Lange (1936–37, pp. 90–91); a similar view was expressed by Dickinson (1939, pp. 104–5).
18. Obviously there is general agreement that a socialist system must grant freedom of choice in consumption and choice of occupation.
19. Dealing with Dickinson-type models, Hayek wrote: 'More serious is the question whether it still deserves the designation of planning. It certainly does not involve much more planning than the construction of a rational legal framework for capitalism. If it could be realized in a pure form in which the direction of economic activity would be wholly left to competition, the planning would also be confined to the provision of a permanent framework within which concrete action would be left to individual initiative' (Hayek, 1935c, pp. 218–19).
20. See Radomysler (1946, p. 190); Drewnowsky (1961, pp. 40–41); Roberts (1971, pp. 566–71); Abdel-Fadil (1975, pp. 133–4); Lavoie (1985, p. 125).
21. Lavoie's view is diametrically opposed. According to him Lange introduced few market elements into socialism (see Lavoie, 1990, p. 73).
22. According to Heal, those sharing Lange's approach to planning emphasized in particular the advantages afforded by institutional factors such as the alleged possibility for the government to control the distribution of real income (see Heal, 1973, p. 80; also see, among others, Bliss, 1972, pp. 90–91, and Chapter 6 further on).
23. This is the reason why Roberts (1971), who dealt with this point with utmost clarity, linked his criticism to the attempt to demonstrate that the price/marginal cost levelling rule has no role in a socialist economy (see further on).
24. On the role of the planner in a market socialism model, see, for instance, Horvat (1964, pp. 30 ff.).
25. Also in the light of our previous observations the common tendency to equate the plan-versus-market option with the centralization-versus-decentralization option *tout court* can hardly be justified (see, among others, Brus, 1964, pp. 14 ff.). As will be mentioned in detail further on, the idea that Walrasian *tâtonnement* is the typical market mechanism is open to much criticism; but here we must stress that even though it may be true that the market reaches its equilibrium by 'trial and error', Clower and others have pointed out that the Walrasian model requiring an 'auctioneer' to cry out prices and note down demand and supply levels is, on closer analysis, a centralized economic model (see, for instance, Clower, 1971, and Musu, 1977).
26. In a letter he wrote to Hayek in 1940 Lange also added that he was proposing the socialization, not of all firms, but only of those that do not operate in a competitive market (see Lange, 1940, p. 298). Here he appears to have changed his mind (although, to be fair, he said something similar in the closing section of his 1936–37 article).
27. Although Lange was a Marxist, he reckoned that an economic system would operate much more effectively if it was structured in line with orthodox economic thought rather than in line with Marxist economic theory. Lange's original and attractive Marxism resulted, as it were, from a blend of neo-classical economic theory and Marxist social and political thought (see Lange, 1935).
28. According to Kornai, for instance, Lange's model is unacceptable on account of historical experience, because a decentralized economic model effectively functioning in the Walrasian sense is in contrast with a social system based on the principles of socialism (see Kornai, 1980b, pp. 147–53 and 1993, pp. 56–8; also see Temkin, 1989, p. 197 and Plant, 1989, pp. 74–5). With particular reference to Marxist thought, he also argued that the conceptual plane within which market socialism fits is totally removed from classical Marxist theory (see Kornai, 1992, p. 474).
29. Possible objections to Amin's arguments are the consideration that price is not a category characteristic only of the capitalist production mode and the fact (generally

recognized in Marxist theory) that Marx himself assumed that money and prices would only disappear at a later, much more advanced stage of socialist revolution (see, for example, Mandel, 1962, vol. II, pp. 722–6).

30. According to Hahnel and Albert, 'markets promote snowballing individualism that is demonstrably non-optimal regardless of whether they are combined with private or public enterprise' (see Hahnel and Albert, 1990, p. 218).
31. Among Italian theorists who still insist on the rapid abolition of markets, firms, commodities and exchange value in any socialist order let us mention La Grassa (see 1994b and 1994c).
32. To mention just one of the many issues that ought to be discussed in connection with what has just been said, let us point out that in Marx's opinion the market does not in itself necessitate exchange value-oriented production; and so it is doubtful whether in Marxian theory the market is the real cause of alienation (see the appendix to Chapter 6 below).
33. For a critical review of these Marxist criticisms, see Nove (1972).
34. For an explicit early criticism of Lange's approach from this perspective, see, for example, Valli (1974, pp. 296–7).
35. See, for example, Medio (1974) and Blaug (1974, pp. 79 ff.).
36. See Debreu (1959); Arrow and Hahn (1971). For a brief review of this celebrated theory and the main problems it raised, also see, in addition to the relevant literature, the brilliant exposition Arrow made on being awarded the Nobel Prize (Arrow, 1974).
37. See Dobb (1953, p. 254). Early assessments of this critique of neo-classical theory of capital and distribution are found in Spaventa (1970, pp. 122–9) and Arcelli (1970). For an equally early assessment from a neo-classical perspective, see the closing paragraphs of a small volume by Mark Blaug analysing the true implications of the 'Cambridge revolution': 'Whatever is wrong with neo-classical economics (and who can doubt that there is much to complain of?), it wins hands down on all possible criteria. It may be a poor theory for the explanation of business cycles, or "stagflation", or the existence of trade unions, but its central concern with atomistic optimisation lends it a robustness which no purely behaviorist, or descriptive, or holistic theory can match' (see Blaug, 1974, p. 85). For a more recent assessment, see Petri (1989a) and Screpanti (1990, Chapter 5).
38. Garegnani (1960, 1970 and 1976), Roncaglia (1975), Parrinello (1977), Petri (1989a) and others have gone so far as to reject both the general economic equilibrium theory originally propounded by Walras (as marred by serious methodological faults) and all long-run marginalist theories (because they require capital to be thought of as homogeneous). Kurz and Salvadori are the authors of an excellent non-neoclassical treatise on the theory of production (1995).
39. Two earlier contributions in defence of the global production function are Montesano (1974), and Gallaway and Shukla (1974) (the criticisms of P. Garegnani and K. Sato and the reply of Gallaway and Shukla appeared in the June 1976 issue of the same review).
40. See Kaldor (1972) and Kornai (1971 and 1993, pp. 57–8). A basic idea of Kornai's book is that the criterion to be used in establishing the validity of any economic theory is *not* to decide whether a proposition is logically grounded and can be tautologically deduced from previous assumptions, but to verify if it does reflect reality (Kornai, 1971, p. 91). For further criticisms of Walrasian market theory, see Bator (1958) and Bliss (1972).
41. For a substantially similar appraisal, see Hahn (1973) and Koopmans (1974).
42. In point of fact these are arguments against the centralized solution, because in case the equations could not be solved, mathematical planning would also prove impracticable. See, for example, Ward (1967, pp. 30–40); Screpanti and Zamagni (1989, p. 280); Brus and Laski (1989, pp. 56–7).

43. When Lange addressed this problem again in an article published thirty years later, he just said that when he wrote his previous contributions he used to think of the market as a means of solving the system of simultaneous equations of his model and that he had proposed *tâtonnement* on the assumption that the solution of these equations by way of iteration was a convergent process (see Lange, 1965, pp. 158–9).
44. The first to deal with this subject was Samuelson in 1949. For more recent analyses see Negishi (1962); Ohyama (1972); Sonnenschein (1973).
45. See Dobb (1939a, pp. 243–4, 1939b, pp. 41 ff., 1953, pp. 74 ff.). Also see, on this point, Dickinson (1933, pp. 237 ff.); Napoleoni (1962a, pp. 202–3, 1962b, pp. 479–80); Nuti (1978, pp. 192–5); and Ehrlich (1978).
46. As for the consumption-versus-investment choice and the simultaneous, rational determination of investment and interest rates, let us mention a sharp-sighted argument raised by Dobb in 1939 (1939b), although this is no longer applicable today in the form in which Dobb propounded it.
47. See Dobb (1953, pp. 74–5) and the entry on 'Planning' in Napoleoni (1956, pp. 1119–30). In a strongly critical article Kaldor argued that contemporary economic science had constantly been losing in importance since the very day it began to focus on the allocation of resources among competing uses and, consequently, to neglect the *creative* function of markets as agents of economic change (see Kaldor, 1972, p. 1240). On this same point, also see Elster and Moene (1989b, pp. 5–7).
48. See Dobb (1933, pp. 36–7, 1953, pp. 66–74). More objections to this line of reasoning are found in Lerner (1934), along with Dobb's reply and Lerner's own counterargument.
49. The above line of reasoning recalls Weber's well-known contention that the growing trend towards rationalization in the Western world does not by necessity involve any growth in individual knowledge or awareness. (For instance the workman using a machine or a person watching television in the evening often ignore how those appliances are built and what principles they are based on.) On the contrary, Weber argued, the growing application of scientific findings to all fields of human life is generating a kind of reliance on experts which adds to ignorance (see Weber, 1919).
50. See Dobb (1953, pp. 72–3). Here Dobb is clearly suggesting that to oppose economic liberalism means to reject the principle that each individual is the best judge of his/her own well-being (see further on). On the rationality of consumer choices, see, for example, Kahneman, Slovic and Tversky (1983) and Beckerman (1989, pp. 82–5).
51. See Dobb (1956, p. 1122), and also Dobb (1953, pp. 65–7). For a critical review of Dobb's view on these points, see Brus (1964, pp. 34–41) and Ward (1967, pp. 24–6).
52. It may be interesting to mention that when Dobb wrote his first book on the developments of the Soviet economic system (see Dobb, 1928) he essentially shared Lange's views (see Dobb, 1933).
53. The gap between Dobb's and Lange's stances will narrow if we mention that in the latter part of his study Lange spelt it out in bold letters that the real problem to be solved was dynamic change (see Lange, 1936–37, pp. 106–10).
54. It is interesting to remark that when Stalin argued in favour of the application of the law of value to a socialist economy, that is, when he confirmed that the allocation of resources was to be governed to a certain extent by the market mechanism, he was only referring to the sector of consumption goods (see Di Leo, 1970, pp. 205–26).
55. On this issue Hahn recently wrote: 'A socialist economic order is known to be incapable of guaranteeing a satisfactory intertemporal allocation of resources. And this is true not only because markets do not express any externalities, but also because a large number of important markets are non-existent. Future generations are prevented from making any offers for resources allocated in today's markets ... As all this induces governments to concern themselves with our "long-term future", it ends up by extending the scope for

action of government authorities and by generating some doubt concerning the validity of the system' (see Hahn, 1993a, pp. 7–8). On the subject, also see, for example, Mc Nally (1993, pp. 199–201).

56. As is well known, over the years authors have been formulating different 'laws on the priority of accumulation' applicable to centralized socialist systems (see Moravick, 1965; Erlich, 1978; and Nuti, 1978, pp. 191 ff.).
57. As for the 'sovereign' position of consumers, it has been shown that Dobb rejected the liberalist principle that each individual is the best judge of his/her own welfare; today this criticism of individualism is accepted by a great many 'welfare economists' although it is doubtful it really fits into Marxist thought (for some excellent comments on this point, see Sterpi, 1974, pp. 24 ff. and pp. 175 ff.).
58. See, in particular, Dobb's *Soviet Economic Development*, but also his exaltation of Stakhanovism which returns again in later editions (see Dobb, 1966, pp. 466 ff.).
59. For a short but pithy assessment of Dobb's achievement, see Sweezy (1974, p. 481); for the connections between Marxian theory and modern economic theory, also see Desai (1974).
60. More details on this point are found in Stiglitz (1994, pp. 18–20).
61. Among scholars who share the view that investments must be planned for reasons discussed in this paragraph, see Roemer (1993) and Roemer and Silvestre (1993).

3. Liberalist criticisms of the Lange model

Here we are indeed confronted with the effects of a doctrine which has recently been surfacing in a wealth of writings and which holds that the State is the supreme objective of mankind and that man's primary duty is to serve the State: a doctrine which to me seems equivalent with plunging back, not into heathenism, but into idiocy. (Nietzsche)

3.1 INTRODUCTION

Despite the criticisms mentioned in the previous chapter, socialist economists by and large accepted the conclusions of Lange's analysis and many of them shared the view that the Lange model had simply but adequately demonstrated the superiority of market socialism as compared to capitalism.

Papandreu, for example, wrote: 'This model of socialism [Lange's model] or, as an alternative, a capitalist economic model with centrally-determined prices is the logical arrival point for any economist who sincerely believes in the capability of economics to generate ever greater efficiency in the context of contemporary technology' (see Papandreu, 1972, p. 29). And this, as already mentioned, was the opinion of a great number of economists.[1]

None the less we had better not take this conclusion for granted. There is indeed one point – in the opinion of many the real *punctum dolens* of the entire issue – that neither Barone nor Taylor or even Lange discussed and that consequently still awaits a solution. It has already been mentioned that Lange (and his predecessors) did not concern themselves with the problem of control and incentives (which has rightly been defined 'the essence of economics'; see Lazear, 1987, p. 744). Up to this point our problem has been to ascertain whether profit can be assumed as a *measure* of efficiency; but since profit in capitalism is also and above all a *reward* for efficiency, now we have to ask ourselves whether a socialist order should envisage rewards for efficiency attained and, possibly, penalties for non-efficiency. And in the event we decide that efficiency is to be rewarded, what would be the right rewards for a socialist system? If, conversely, no rewards are envisaged, who can ensure that the rules of the game are observed? In other words, who can vouchsafe that the system can actually function in the manner described?

For the economist this is the central issue behind the entire question, because he/she will never admit that a person may work and accept the discipline of the factory if not in exchange for money (in other words, that a person may work without the well-known 'material incentives').[2]

What has been said so far may provide a suitable introduction to the liberalist criticisms of the Lange model which proved to be decisive in the long run. The most important of these is undoubtedly Hayek's and was set forth in an article (published in 1940) in which Hayek criticized Lange's and Dickinson's proposals by further developing arguments he had already expounded in his 1935 articles. At first his criticisms received little attention, but today they are generally held to be the strongest arguments against Langean-style market socialism.

This chapter, however, is not entirely dedicated to the liberalist criticisms of the Lange model; in the first part we also briefly examine a model of centralized socialism which sets out from Dobb's criticisms in order to repropose centralized planning as an alternative to capitalism. The reason why we are going to discuss this model here is that, being widely accepted by socialists, it became the target of liberalist criticisms even more so than Lange's. To carry on the discussion, in the second half of the chapter we propose a Lange-style model. As will be explained in greater detail further on, the original Lange model contains a major contradiction that must be solved. In view of our future analysis and comparison of different market socialism models we have thus deemed it convenient to identify a 'Lange–Taylor model' that can best be opposed to the other ideal types of market socialism which will be dealt with in the sections that follow.

3.2 THE COMPUTER AS A SUBSTITUTE FOR THE MARKET

Let us start by analysing the stances of a number of socialists who accepted Barone's and Lange's basic ideas, but continued to insist (even after the early criticisms of Hayek and other liberalists) that the planner could solve the problem of prices with the sole aid of mathematical techniques. As, at that time, both Lange and Dobb had published their contributions, this must be considered an extreme position diametrically opposed to that of the liberalists. Be that as it may, the fact remains that even after Lange's contribution many socialists continued to cling to the model of computer-aided centralized planning as their ideal. In 1940 Hayek set out to comment on the analyses of Lange and Dickinson, but in actual fact some of his criticisms concerned the centralized planning model without markets, so that a review of this model may also help us better evaluate Hayek's 1940 contribution.

As already mentioned, the previous criticisms of Dobb's analysis may prompt the conclusion that the most appropriate approach is to accept Dobb's view that the alternative to capitalism is centralized planning and use it, not to refute Lange's analysis altogether, but to propound a theory of planning capable of highlighting the advantages of a centrally-managed system over a market system.[3]

The line of reasoning of these scholars is the following. Condensing the plan-versus-market problem into a formula, a planned economy is superior to a market economy because the former can be organized in such a way as to attain maximum investment efficiency *from the social point of view* (that is, from the perspective of the community at large), while the latter, by its very nature, tends to attain maximum investment efficiency *from the private point of view* (see, for example, Bettelheim, 1966, pp. 54–5; Lange, 1958b, pp. 176–7; Mandel, 1962, vol. 2, pp. 635–6); but the potential superiority of a planned economy, they add, will only be realized in practice if investments are made in accordance with strict rules of economic calculation. And this is exactly what Barone, Taylor and Lange set out to do: to show that even in a planned economy investments can be made in keeping with the strictest rules of economic calculation.[4]

An observation to be made when explaining this point is that today, in the so-called computer age, Robbins's millions of equations can be solved 'on paper' (that is, by using the computer in lieu of the market) at least when one chooses not to rigorously comply with the wishes of consumers as expressed in their demand schedules (the demand schedules which summarize the levels of demand that would be registered at all, or at least a few, probable price levels).[5] In this regard, as we have seen, Dobb and others have rightly argued that in present-day capitalist systems consumer choices are seldom free or rational and that 'consumer sovereignty' is thus but a myth.[6]

Keeping this in mind, let us none the less assume that consumers are by and large let free to choose the goods they desire, but that the optimum production volumes of single goods are decided by the planner at the time the plan is drawn up.[7] If we adopt a Walrasian *tâtonnement* process similar to that suggested by Lange for the decentralized model, equilibrium prices would have to be found by means of an iteration process in the market (which one would suppose to be convergent). On the contrary – it is suggested – the task of handling the system of Walrasian equations could be equally well assigned to a computer which would solve it in just a few minutes. Consequently the computer may be considered a device to imitate the trial and error procedure occurring in the market or a more modern technical aid for solving problems which for a long time had to be solved by means of a more antiquated tool such as the marketplace.

This use of the computer is obviously based on the assumption that the Planning Bureau is acquainted with production functions just as one supposes that enterprises are acquainted with them (see Arrow, 1974).

The proposal of computer-aided centralized planning has distinct advantages. First of all a computer takes just a few minutes to solve a problem which the market would only handle in a much longer timeframe, after a long sequence of errors, adjustments and readjustments and with social costs which at times might be extremely high (the failures and crises of market economies) (see, for example, Lange, 1965, pp. 159–60; Kornai, 1971, pp. 336–7). Second (and this is generally considered its main advantage), the computer can calculate the convenience of investments in terms of maximum social efficiency rather than in terms of private profit. And in the light of the specific characteristic of the market pointed out by Dobb (its ability to solve the static problem of the allocation of resources) this advantage seems to be highly significant for long-term planning.[8]

3.3 THE ROLE OF THE COMPUTER IN CENTRALIZED PLANNING: CRITICAL CONSIDERATIONS

But the solution we are discussing here also has obvious disadvantages and implementation difficulties which apparently prove impossible to overcome. As a matter of fact, there are two options: either the Planning Bureau decides to take into account consumer preferences and the variability of production coefficients in the same manner as the market does (in which case the practical difficulties of planning will be enormous); or it decides to consider consumer preferences and the variability of production coefficients only in an approximate manner (in which case the system will be neither fully democratic nor fully rational).

The reader may recall that this objection was also raised by Barone when he pointed out that constructing demand and supply functions without recourse to the market would be a complicated and expensive task beyond human capacity.[9] As already mentioned, to ascertain consumer tastes the Planning Bureau would have to carry out large-scale market researches for the immense variety of goods that are produced; moreover, to make its supply curves known, every enterprise would have to provide the Planning Bureau with extremely detailed information concerning the different production combinations which can be adopted in connection with the different possible prices of goods and factors. In fact both of these would be Herculean tasks and in any case beyond the Planning Bureau's capabilities.[10]

But, if what said so far is true, we are back where we started. Considering that in Lange's centralized model the prices of the various goods are fixed by the Planning Bureau while the market is used to organize productive activity and, then, distribute the products among consumers, the question arises whether Lange's centralized model may not offer a better solution than the use of computers. In this case, in fact, all the advantages of the computer-aided system could be maintained and, in particular, at least some of the goods to be produced might be chosen on the basis of long-term and social considerations; but the Planning Bureau would not have to carry out laborious and expensive researches in order to ascertain the production functions of enterprises. By resorting to Lange's centralized model, if the goods to be produced are in essence chosen based on the preferences of the Planning Bureau, market researches could be confined to identifying only those consumer preference patterns that are deemed essential; and the research necessary to identify production functions would be replaced with the decisions of single enterprises, which would have to find means for producing their goods at the lowest cost possible. The only task of the Planning Bureau would be to give orders and to monitor the actual observance of Lange's rules which, as already mentioned, are rules governing the optimal use of resources.[11]

But the objections against assigning the computer merely the task of selecting the goods to be produced would be no less decisive, since even in this case society might tend to organize itself as a large bureaucratic-administrative structure where decisions are made at the top, where orders would run from the centre to the periphery as mere passwords to be executed in the production units, and where the problems of workers' participation and control would consequently not be solved.

There are two enormous problems linked to this. The first of these is managing the difficult task involved in making workers participate in the fundamental choices of the plan once this has been worked out by a computer. Involving workers in planning options is in any case a difficult task, but it becomes all the more difficult if enterprises (that is, the production units in which the workers *live*) have little or no autonomy, that is, if the options on which the planner's decisions are based do not stem from the enterprises themselves at least to a certain extent.

The second problem, which is closely related to the first, concerns the degree to which the decisions made will be *put into practice*, since workers who are little involved in the fundamental decision-making process can barely be expected to stick wholeheartedly to directives from the centre which have all the appearance of being orders from the top (as the experience of the Soviet Union amply demonstrates).[12]

Let us suppose that the workers are democratically involved in basic planning decisions at least to the extent this is possible in a system without labour management. At the very best they will have participated in a small number of fundamental decisions such as those that can be made at workers' meetings. Although they may be assumed to accept the plan, this will not avert the problem of deciding who will make the decisions concerning the infinite number of small problems that crop up in an enterprise on a daily basis.

In other words, the planner can only make *a small number* of decisions, just the really fundamental ones which have to do with major issues of economic policy; he/she cannot concern him/herself with the myriad of problems that arise in the thousands of enterprises that make up the system. Whose task is it to decide, for instance, whether a factory will have to manufacture shoes for adults or for children, what styles of clothes are to be produced, what weight and length the iron pipes manufactured by a factory should be, and so on?

Today these topics are outdated because the collapse of the Soviet system has shattered the illusion that a good economic system can be organized without the market or with a limited recourse to it.

Commenting on attempts to solve the problem of economic calculation in planned economies like the one mentioned before, Napoleoni wrote:

> To adequately conceptualize this question one will probably have to define the relations existing between innovating entrepreneurship and optimization in an equilibrium context. These relations can be described as follows: by optimization we mean the best possible way to achieve an end by choosing from a variety of alternative uses of specific means; entrepreneurship first and foremost involves broadening the range of achievable ends and, secondly, adopting more effective tools than those previously used. It follows that growth – also in the stronger, that is, qualitative sense of this word – is not achieved by evading the relationship between means and ends, that is, the problem of making the best possible use of resources in each given circumstance, but is rather the result of the attempt to change the terms in which the problem is posed. (see Napoleoni, 1976, p. 158)

The merit of Napoleoni's proposition lies in suggesting that the problem of rationally using scarce resources is not the only 'economic problem' (as would appear from the perspective of the neo-classical school) and that also such issues as the ends being pursued are of interest for economic science. None the less one may doubt whether this second order of problems has always to do with entrepreneurship and whether it is justifiable to adopt Napoleoni's definition of it as a problem concerning 'the relations between planning and entrepreneurial activity' (see Napoleoni, 1976, p. 158).

As mentioned above, these issues are no longer relevant now, after the collapse of the Soviet system. None the less an overview and criticism of the computer-aided centralized planning model, besides completing the picture of the subject we are dealing with here, are also useful in introducing Hayek's criticisms of market socialism. As already mentioned, while fiercely criticizing Lange (and Dickinson), Hayek at times based his arguments – and not without reason – on the assumption that, even after Lange's contribution, socialist

theorists were still mainly proposing the computer-aided centralized planning model (see McCormick, 1992, p. 135).

3.4 HAYEK'S CRITICISMS OF THE COMPETITIVE MODEL OF SOCIALISM

At this point we proceed to illustrate Hayek's criticisms of competitive socialism. As a matter of fact we touched upon some of them in the preceding paragraph, but it is only now, after the analysis of the most important liberalist arguments against centralized planning, that Hayek's specific criticisms of Lange's contribution can be addressed in greater detail.

As is well known, Hayek responded to Lange's (and Dickinson's) contributions with a highly in-depth essay (see Hayek, 1940) which set off from the assumption that the debate we are examining here had up to then developed in three stages. In the first of these the debate had focused on the problem of whether a socialist economy could completely do without value calculations, as Engels and many other Marxists had claimed. This stage came to an end with the contributions of Pareto, Wieser and Barone, who provided clear evidence of the reasons why socialism could not do without the much debated 'value'. In the second stage the problem raised was whether the task of fixing value in socialism could really be left to the central Planning Bureau (assumed to operate with the sole aid of mathematical techniques). This stage was brought to a close when socialists accepted the viewpoint (already established prior to Lange's contribution) that at least some recourse to the market was absolutely needed.[13]

According to Hayek, therefore, Lange's contribution fitted within the third round of the debate, the stage in which the central issue at stake was whether a socialist economy could work by reintroducing a certain limited extent of competition.

The above timing of the debate is in contrast with the opinion of Schumpeter, according to whom 'the economist who settled the question in a manner that left little to do except the elaboration and the clearing up of points of secondary importance, was Enrico Barone' (see Schumpeter, 1942, p. 173).[14] Furthermore it is worth adding that by describing the evolution of the debate in the above terms Hayek could counter Lange's claim that the critics of socialism had admitted their defeat concerning the crucial point of the debate and had fallen back on a second line of defence (see Lange, 1936–37, pp. 57–65). In Hayek's view, the first and second stages of the debate had both ended with the victory of the liberalists and it was the socialists that had fallen back on defence positions. As for the second stage, he observed that Lange's article was intended to suggest that no socialist had ever accepted the idea of solving the problem of equilibrium prices with the sole aid of mathematical techniques although Dickinson (not to mention others) was still upholding such a view as late as in 1933 (see Hayek, 1940, pp. 183–4). As mentioned in the previous sections, the idea of computer-aided planning and the attempt to avoid recourse to the market both survived even after Lange's contribution.

According to Hayek, having abandoned the idea of fixing prices by working out a huge system of equations at the desk, Lange actually proposed a trial and error model proper in which the planner fixes the entire price list of capital goods (let us repeat that the prices of consumer goods are fixed by individual enterprises) and then changes them if and when demand does not equal supply.[15] But an initial objection in this regard is that Lange seemed to hesitate between two entirely different solutions, that is, the solution of changing prices on a daily basis, one at a time, and the solution of reviewing them in bulk at intervals. In both cases price changes would occur at a slower pace than in a true market system, Hayek observed, and the delays would certainly be of great consequence in case the planner were required to publish complete price lists at fairly long intervals.[16]

A further, even more serious drawback of centrally-determined prices is that they can only be fixed for large categories of goods without taking count of possible varieties of one and the same article, different quality levels or sales points. As a result of this, enterprises would not be encouraged to differentiate and customize their production in line with individual customer needs or improve the quality of the goods offered.[17]

With centrally-determined prices there would be no stimulus to carry out research into more convenient manufacturing methods. Furthermore, the implementation of improved production techniques or adjustments required in the face of changing circumstances would only be possible if one managed to convince the Central Planning Bureau that the proposed technique is the best available; 'or, in other words, every calculation by an outsider who believes that he can do better will have to be examined and approved by the authority which in this connection will have to take over all the functions of the entrepreneur' (see Hayek, 1940, p. 197).[18]

Concerning the observance of the planner's instructions, it is worth mentioning that if managers are unable to persuade a supplier to offer greater quantities of an item they need, they would have to either produce that item themselves (using more costly techniques) or drop their production altogether. Let us assume that a manager about to run short of a tool expects an imminent rise in its price. Will he/she have to make his/her price/marginal cost levelling calculations based on current prices or on expected future prices? And how – wishing to take count of future prices – will he/she manage to convince the Central Planning Bureau of his/her good faith since these future prices have not yet been fixed in any price list?[19]

Let us now suppose that managers are also authorized to forecast price changes. Would it be right to hold a manager liable for losses due to erroneous forecasts when the changes in prices are entirely dependent on the planner's decisions? In other words, can a planner put the blame on a manager and punish him/her for failing to forecast what the planner would do?

Consequently the Planning Authority would not have to confine itself to formal controls; it would have to ascertain not only what the manager has done, but also what he/she could and ought to have done. 'If this will not lead to the worst forms of bureaucracy', is Hayek's conclusion, 'I do not know what will'.[20]

Turning to the problem of investment choices, Hayek reiterated the arguments he had already propounded five years before: in his opinion, socialist enterprises would avoid taking risks because profit-earning would not necessarily be considered a sign of success and would not be adequately rewarded, whereas a failure would result in a penalty. Although it was shared by Dickinson (1939), this was in fact a gratuitous contention and, as will be shown further on, was not backed up by adequate evidence;[21] none the less Hayek himself was persuaded that his observations on investment decisions were his most forceful criticisms of Lange's theses (see Hayek, 1940, pp. 199–203).

Hayek's overall idea on the subject is that the Lange–Lerner model fails to make it clear how investment decisions and the decisions to reward or punish success or failure can be apportioned between firm managers and central authorities. In his opinion, such important decisions cannot be left to managers because these do not own the plants and have no personal property to lodge as security in the event their decisions prove wrong, but nor can they be vested in the central planning authorities, since the required economic information is dispersed among myriads of people each of whom is only informed of the developments in his/her immediate surroundings; this means that a planner in charge of every investment decision would have to know a multiplicity of facts that no single operator, no matter how well organized and efficient, could ever collect. In Hayek's view, in a society organized in the manner suggested by Lange investments would inevitably be directed from the centre, but the central authority would never be in a position to make the calculations required to make rational choices.

Those who hold the view that the socialist scheme would oblige the planner to solve a Walrasian system of equations at the desk contend that Hayek's most forceful criticism was to have pointed out that any planning authority would find it physically impracticable to collect the information required to work out those equations.[22] As we know, however, this criticism can in no way be dealt out to Lange, whose merit was to have demonstrated that the planner does not have to solve a complex system of equations at the desk.

In the opinion of some authors, Hayek's paper already contains the criticism that 'market socialism would fail to achieve the efficiency of real market capitalism because the Walrasian models used to construct the economic theory of socialism left out important features of real markets that generate efficient outcomes' (see Vaughn, 1980, p. 535; see also Vaughn, 1994, pp. 49–61); and in their opinion this is Hayek's main objection to the 'competitive solution' of socialism, because if Walrasian models leave out important aspects of reality, those using such models to suggest how a socialist order could be organized end up by proposing an imperfect and inefficient form of social organization (see Moss, 1994, pp. 97–100).[23]

Hayek did not develop this critique of the competitive solution of market socialism in either his 1935 or his 1940 article.[24] It was (undoubtedly) in later writings that he found fault with the use of the Walrasian model in explaining socialist pricing by arguing that it was barely able to explain anything and abstract to the point of being useful only in explaining a pure market reality with perfect competition; the Walrasian model, he continued, takes no account of uncertainty and fails to explain both the process that brings about equilibrium and how the required information is collected;[25] it highlights by its very nature that a true market system would allocate resources efficiently only by relying on information which is not merely of a technological nature, which is not to be found in a precise place (and which is consequently not handed down in written documents). As a result, the Walrasian model is of little use in explaining the situation that would arise in a socialist country intending to reproduce the conditions prevailing in a market system. The notion that information, being dispersed, cannot be collected by the planner – perhaps Hayek's major contribution to economic thought – is not only a criticism of the Walrasian model, but also and more specifically a criticism of the perfect competition hypothesis overall. In Hayek's view, the competition which takes place in the market is needed mainly to collect the information which is scattered among millions of individuals. Contrary to what the perfect competition hypothesis seems to suggest, however, the information collected by the market cannot be as effectively collected by a central planning authority mainly because ongoing changes in the market mean that the information collected today may be of no use the very next day. The knowledge the market draws from the information which all of us keep forwarding to the market is basically a form of inarticulate knowledge: drawn from the experiences that each of us has amassed (often unconsciously) in his/her individual sphere by accumulating data and sensations over the years; it is inarticulate because the individual possessing it is unable to articulate it even to him/herself, let alone to the central planning authority. This knowledge is grounded in tradition, that is, experiences and judgements which may date back to earlier times although they are still alive and functional today and whose origin may have been forgotten. As observed by Gray, it is impossible to understand Hayek's defence of the market without acknowledging that in the real world – which differs from the scenario painted in neo-classical economic theory – no single subject can have an exhaustive knowledge either of the resources that are actually available or of the propensities of single individuals (see Gray, 1989, p. 131). The above reflections induced Hayek to conclude that a well-ordered socialist society was conceivable in theory, but was not even remotely possible in practice, since the models that socialists were found to adopt in explaining the pricing process in the kind of society they had in mind had nothing to do with the way prices are fixed in the real world.[26]

3.5 MISES' AND HALM'S REPLIES

Returning to the problem of socialist economic calculation,[27] in his economic treatise on *Human Action* (1949) Mises wrote:

> It is therefore nothing short of a full acknowledgement of the correctness and irrefutability of the economists' analysis and devastating critique of the socialists' plans that the intellectual leaders of socialism are now busy designing schemes for a socialist system in which the market, market prices for the factors of production, and catallactic competition are to be preserved. ... The socialists cannot help admitting their crushing final defeat. They no longer claim that socialism is matchlessly superior to capitalism because it brushes away markets, market prices, and competition. On the contrary, they are now eager to justify socialism by pointing out that it is possible to preserve these institutions even under socialism. (Mises, 1949, p. 702)

This was not recognized by many authors. In their opinion the Achilles' heel of a staunch liberalist such as Mises had been touched when Barone and Taylor (and later Dickinson and Lange) provided evidence that a socialist system could solve the problem of how to rationally allocate scarce resources. As mentioned before, according to these authors Mises and Hayek had been obliged to fall back on a different objection by ceasing their attacks at the theoretical possibility of a rational use of resources under socialism and concentrating on the issue whether socialism could work in practice.

In Mises' view the proposals of Lange and his followers were paradoxical because they involved abolishing market prices and competition while adopting production modes under which individuals were expected to behave *as if* these (markets and competition) were still in existence. 'They want people to play market as children play war, railroad or school', he observed (Mises, 1949, p. 703). But reality cannot be reproduced either by the work of the imagination or through imitation.[28]

The main error in Lange's conception, Mises wrote, is to view the problem from the perspective of a lower-level employee instead of a manager's. Liberalist economists do not deny that it is possible to instruct managers to run their firms as in a capitalist system and motivate workers to behave with the discipline and commitment needed to conduct production effectively; what they deny is that capitalism is a managerial system. Even in a corporation decision-making does not ultimately rest with the manager or the managing director, because these act upon the authority vested in them by their employers (the shareholders) and have a much less significant role than is usually assumed.

The main problem an economic system is called upon to solve, Mises continued, is how to continuously upgrade the production structure and bring it into line with the ever-changing requirements of consumers. And this is the task of entrepreneurs and capitalists, who create fresh business opportunities, increase or reduce the size of a firm, purchase and sell stock, and take on or extend credit.[29]

> Our problem does not refer to the managerial activities; it concerns the allocation of capital to the various branches of industry. The question is: in which branches should production be increased or restricted, in which branches should the objective of production be altered, what new branches should be inaugurated? With regard to these issues it is vain to cite the honest corporation manager and his well-tried efficiency. Those who confuse entrepreneurship and management close their eyes to the economic problem. In labor disputes the parties are not management and labor, but entrepreneurship (or capital) and the salaried and wage-receiving employees. The capitalist system is not a managerial system; it is an entrepreneurial system. (see Mises, 1949, p. 704)[30]

Mises' criticisms (which echo Hayek's) closely resemble the stances of all those who are willing to admit that Lange's model may offer a practical solution to the problems of socialist planning, but continue to argue that the market-aided economic calculations of a socialist planner will necessarily be less efficient than those performed in a market system proper and that centrally-fixed prices will be much less rapidly adjusted to ongoing changes than market prices are.

A protagonist of the earlier phase of the debate such as Halm (see Halm, 1926), who tackled the subject time and again (see Halm, 1935, and 1968, Chapters XIV–XVII), basically adopted the same perspective as Mises. According to him, whenever any supporters of market socialism discussed the rules that were to govern the behaviour of managers, they were deliberately vague and evasive because the weak point of their arguments was precisely the attempt to substitute these rules for the profit motive.

In his opinion, as even capitalist enterprises may be bureaucratically organized (above all when ownership is separated from control) and the incentives available in the socialist enterprise (that is, differences in pay levels) seem to be working well enough, it is not the *internal* organization of the socialist firm that makes a real difference. The crux of the problem is how to allocate resources, that is, decide how and when investments are to be made and what new products or new technologies are to be introduced. And according to Halm, Lange's rules do not provide any guidance on these points.

While in a capitalist system investment decisions are vested in the managers of single firms and are made by weighing risks against prospects of success, Halm wrote, in market socialism all investment decisions, irrespective of their degree of decentralization, are in any case vested in the officer responsible for a whole branch of industry and consequently the latter has to face a much more difficult task. When questioned on this point, supporters of market socialism usually argue that the information on the overall situation in a branch of industry that is available to a planning department will be much more extensive than the information available to any capitalist firm manager. Without denying this, however, Halm objected that those in charge of entire branches of industry would have to weigh this information against a wealth of other data and would thus require an immense quantity of statistical material (see Halm, 1968, pp. 205–8).[31]

3.6 FURTHER CRITICISMS OF LANGE'S MODEL

At this point we are going to examine a number of additional objections against Lange's analysis which will help us further develop our discussion.

As mentioned above, Lange (just like Barone and Taylor before him) failed to address two problems: the issue of who would exercise control over the business activities conducted by firms and the problem of incentives.[32] As in Lange's decentralized model firms were simply expected to observe the rules fixed by the planner, it is logical to ask (from the perspective of Hayek's objections discussed above) if there will be any criteria and procedures to decide whether a firm has actually observed the rules and has used its resources in the most efficient way.[33]

In Hayek's opinion, if, as suggested by some (see Dickinson, 1939, pp. 213 ff.), the central authorities were empowered to supervise the observance of rules in every single case, this would conflict with the principle of competition, that is, decentralization, and would furthermore be impracticable. Thus it would appear that the only reliable indicator of a firm's success and of the ability of its managers is the profitability of the firm itself. High profits would indicate that a firm is well organized, efficient and capable of using its resources efficiently; meagre profits would be a sign of inefficient organization.

Other authors have suggested that profit might also be used as an incentive to production. In point of fact, however, there is a big difference between using profit as an *indicator* of efficiency or as a *reward* for success and efficiency (we shall come back to this subject further on)[34] and, what is more, there are other material incentives to production besides profit: an obvious alternative would be to promote the more able managers and replace those who are not successful.

If the criterion of profit as a reward for success is accepted, it remains to be established what share of such profits is to be distributed as a reward and whether these profits will have to be used only to reward managers or workers as well (which is an even greater problem). This point will be dealt with in detail further on.

Speaking of the logic behind the model, it cannot be assumed that the efficiency of a Langean system may be satisfactorily measured by reference to the principle of profit, because, as mentioned before, the price/marginal cost levelling rule will maximize profit only in perfect competition; and the model analysed here does not rule out monopolistic behaviour.

For a socialist enterprise to behave like a capitalist enterprise under perfect competition, it is not enough to use price as a parameter. Monopolistic behaviour stems from the awareness that prices can be influenced by the level of production and Lange's model cannot lead us to exclude that the larger enterprises will attempt to influence the Central Pricing Department with their actions. 'Competition', Bettelheim wrote, 'is not only an "economic technique", but the result of *precise production relations*. Its prerequisite is the existence of a large number of non-interconnected firms run by managers who participate in the profits of their operations and incur part of the risks' (see Bettelheim, 1966, p. 47). In a system like the one we are describing here the choices of a firm may appreciably affect overall levels of output and, as a consequence, prices. If a firm is large sized compared to the market as a whole, every reduction in the quantity of an article it produces might induce the planner to increase its price. And in such a case, let us repeat this, the socialist enterprise would tend to behave as a monopolistic firm, that is, try to level out marginal cost and marginal revenue.[35]

According to Bettelheim and others, the solution worked out by Lange is impracticable because the socialist production mode is even less likely to operate in perfect competition than modern monopolistic capitalism.[36]

From what has been said it follows that it would be a gross inconsistency to require firms to level out price and marginal cost and, at the same time, to appraise efficiency based on profits. As the strict application of Lange's principle would not always enable a firm to maximize profits, if profit were taken as a measure of success, a firm would have to breach the rules established by the planner in order to be successful.

It is also worth considering that there are cases (studied in modern welfare economics) in which firms applying the marginal cost/price balancing rule will operate at a loss because their average costs will exceed the prices thus determined. If such a firm were also obliged to maximize profits, it would find it convenient, in the long run, to discontinue its production activity altogether (in order to reduce its losses). In such a case, therefore, the state will have to choose one of two possible alternatives: if it obliges a firm to observe the Lange–Lerner rule, then it cannot consistently measure the success of its managers against the profits earned; if, conversely, it chooses to reward profit, then it cannot consistently require firms to observe the Lange–Lerner rule.[37]

As we have touched upon this subject, it will be worth mentioning now that later theoretical contributions stressed the need to adjust the Lange–Lerner rule when applying it to the case of a firm operating at a loss because it had observed that rule. As the planner's task is to maximize the well-being of the community as a whole, from the perspective of welfare economics the inevitable losses of these firms will put the planner under considerable strain, because he/she will only be able to cover such losses by raising taxes from nationalized firms. As a result of this constraint, prices will have to depart from marginal costs at least in some cases and the system will only be able to attain at most a 'second best' result.

In an important (though not original) contribution, Baumol and Bradford brilliantly described what the behaviour of firms should be like in such a situation: they formulated four alternative versions of a suboptimal planner and firm behaviour theorem, of which the simplest is probably that in which the scales of output of all goods should be reduced by (approximately) the same percentage rate compared to the levels that would be determined by applying the Lange–Lerner rule.[38]

Another objection that can be raised against the use of profit as the criterion for measuring the efficiency of socialist firms is that the rate of return on an investment can only be determined when both the revenues earned and the value of the capital goods employed are known; and although the value of new capital goods can be determined in the way suggested by Lange, the planning department will probably not be able to establish the precise value of used, worn-out capital goods for which there are no prospective buyers (see Hayek, 1935c and Robinson and Eatwell, 1973, pp. 266–7).

The most important conclusion which can be drawn from what has been said in this section is that the socialist model with autonomous firms, that is, the proposal set forth in this book, is superior to Lange's because it does not involve the difficulty discussed above. As will be explained further on, in the model with self-management it will be possible to take the return on the investments as a measure of efficiency without having to solve any of the obstacles just mentioned.[39]

3.7 THE MAIN CONTRADICTION IN LANGE'S MODEL

At this point it is time to examine a further criticism which was raised against Lange's model but has so far not been discussed.

As mentioned above, a distinctive feature of Lange's model is the fact that it leaves firms entirely free to fix and change the prices of consumer goods while leaving the task of fixing the prices of capital goods with the planner. But this is a serious shortcoming of his model and is a point where it is easily open to criticism. As a matter of fact, ascribing the task of fixing the prices of consumer goods to firms is a step in the right direction, but it would appear to have as a necessary corollary the decision to entrust the pricing of capital goods to firms as well.

The idea of leaving the pricing of consumer goods to firms was certainly suggested to Lange by the criticisms of Mises and Hayek against centralized planning and probably stemmed from the awareness that the central planning authority cannot collect all the information required to fix (and continuously adjust) rational prices for the myriad of consumer goods in existence. Yet capital goods are equally numerous (ranging from nails and bolts to hoes and fertilizers) and many of them exist in an even greater variety of sizes and types than consumer goods. Consequently there is no reason to assume that what is applicable to the former category of goods should not apply to the latter as well. The need to leave firms free to price consumer goods obviously arises from the idea that the kinds of goods that will have to be produced and the relevant levels of output will have to be determined depending on consumer preferences, and also from the awareness that the preferences of millions of consumers are highly varied and continuously changing. None the less, if one wishes to change the output scale or the quality level of a given consumer good, as a rule it is also necessary to change the output scales and types of capital goods employed in producing that specific consumption good. On the subject Nove wrote: 'Let us imagine a socialist footwear factory. It requires leather, nails, glue, machines, fuel. It cannot respond to user demand unless those who provide leather, glue, nails, machines and fuel can in their turn respond to user demand. In other words, the logic of the model requires market response of those who make and sell producers' goods' (see Nove, 1983, p. 120). The planner's response is too slow and too rigid, because firms will respond promptly to consumer demand only if they have available the required quantities of a variety of producer goods.

In all probability Lange denied firms the freedom to fix the prices of capital goods both because they were publicly owned and because he was convinced that the central planning authority of a socialist state must always exercise control over investment. None the less his proposal was not sufficiently thought out. State-owned capital goods can have a market exactly like that of consumer goods and, as mentioned before, the same considerations that lead us to insist on the freedom of firms to make their choices with respect to consumer goods are applicable to choices concerning producer goods.[40]

In conclusion it is therefore possible to say that in the 1930s Lange was certainly heading in the right direction, but that he ended up by proposing a contradictory model. And this may perhaps explain the evolution of his thought in later years (see further on).

3.8 THE LANGE–TAYLOR MODEL

While Lange's model is not devoid of contradictions and theoretical weaknesses, his contribution does have distinct merits and every study of market socialism must necessarily set out from it. In this section it will consequently be useful to define the exact terms of a model which we are going to name after him in the following pages. As will be seen further on, this model can be compared and contrasted with a different one, that is, market socialism with autonomous firms, and this is another reason why it will be convenient to clarify what we actually mean whenever we refer to the Lange model. But as the model we are about to describe does not faithfully reflect Lange's exact propositions, we have adopted the term 'Lange–Taylor model' to highlight both the theoretical contributions on which it is based and the fact that it differs slightly from the one Lange theorized in 1936–37.

To side-step the contradictory aspects of this model – but mainly to contrast it more clearly with the model with self-managed firms – in the following pages we shall assume that the prices of both consumer goods and capital goods are fixed by the planner. Although this does not reflect what Lange wrote in 1936–37, it is perfectly in line with the rationale underlying his model, whose central assumptions are the parametrical function of prices and the price/marginal cost levelling rule. If we restricted the interpretation to the letter of what Lange wrote and assumed consumer goods to be priced by single firms, we would not be able to contrast what we call the Lange–Taylor model with the model of socialism with autonomous firms; indeed we could not even refer to the celebrated Lange–Lerner rule which is based on the parametrical function of prices. (Let us repeat here that if single firms were left free to fix the prices of consumer goods, they would try to maximize profit and would thus tend to level out marginal cost and marginal income instead of observing the Lange–Lerner rule.)

What remains to be examined is the wage structures, that is, the prices of the services of labour. As mentioned before, Lange suggested that these, too, could be left to the interplay of demand and supply because he was convinced that in a society with socially-owned production means all prices would reflect the tastes and propensities of the members of society. On the contrary, there are grounds for believing that even a socialist order would have difficulty in achieving a socially acceptable income distribution if the wage structure were entirely left to the market. Fortunately the levelling of demand and supply is not the only method to prevent prices from being fixed in an arbitrary manner. An alternative system would be the establishment of a system of employment through public competitive examinations. In what follows, therefore, we shall constantly assume that the central authority fixing the wage structure in the Lange–Taylor model will be guided both by social criteria and by the need for efficiency.

Let us assume that the prices of all goods are fixed by the Central Planning Bureau once a month. Such a model is certainly open to Hayek's 1940 criticisms, but none the less it is undeniably based on the parametrical function of prices, it grants the Central Planning Bureau a role comparable to the Walrasian auctioneer (in line with Lange's suggestions), and it does encourage firms to observe the Lange–Lerner rule if they want to maximize their profits.

In Lange's 1936–37 article the price/marginal cost levelling rule is imposed by the planner; but as it is barely conceivable that all firms will obey the Lange–Lerner rule for mere purposes of social utility, out of a sense of duty or simply in order to obey the instructions of the planner, it is worth ascertaining whether the incentives available are sufficient to secure the observance of this rule. If firms departing from it were found to incur penalties, the Lange–Lerner rule would be turned into a provision of law, as general and abstract as all good laws are; but apart from the fact that Lange can hardly be supposed to have thought of this rule as a legal provision meting out penal or administrative penalties to transgressors, it would be naive to assume that any government would be able to enforce such a regulation. As Hayek and many others argued, it would take a huge army of inspectors and state officers of various descriptions to guarantee its observance by millions of firms day after day. The only solution is to assume that the observance of the Lange–Lerner rule will be guaranteed by the cost/benefit calculations of those in charge of the decisions, that is, by the eligibility of managers for a share of the firm's profits.[41] And this is going to be our hypothesis despite the resulting contradictions already mentioned in Section 6 of this same chapter. (As was argued there, the use of profit as a measure and reward for efficiency raises several problems, but the observations made so far should have thrown sufficient light on the fact that the Lange–Taylor model can be made to work, though not without some imperfections, only if profit is used to stimulate the observance of Lange and Lerner's rules. And this is precisely what we are going to assume here.)

The last point to be discussed when defining what we term the Lange–Taylor model is who makes investment choices. As mentioned above, Lange made it clear that the planner's task was to apportion income between consumption and accumulation and distribute investments among the different sectors of the economy, but that the choice of investments was to be left with the single firms. And this is also our hypothesis.

From here on the term 'Lange–Taylor model' will thus be used to refer to a market socialism model in which:

a. firms are publicly owned;
b. the prices of all goods are periodically fixed by the planner in such a way as to level out demand and supply everywhere;
c. the wage structure is centrally devised in line with principles of fairness and efficiency;
d. firm managers are rewarded by being granted shares in the firm's profits;
e. managers are chosen by public competitive examination and are promoted by moving from one firm to another based on the results of their operations;
f. investments are decided on in the single firms;
g. the net profits earned by firms after deducting the shares to be paid to managers are used to finance investments or for social purposes.[42]

3.9 LAVOIE'S CRITICISMS OF LANGE'S MODEL

Once defined, this model may provide a precise background against which to discuss Lavoie's radical reinterpretation of the views set forth by the contending parties in the debate of the 1930s and his severe criticisms of the socialist participants in that debate.

As mentioned above, to counter the criticisms of Mises, Robbins and Hayek, Lange merely denied that the planner would be obliged to collect the information required to solve a Walrasian system of equations. He maintained that the planner would only have to fix prices and that the equilibrium prices would then result from the interplay of demand and supply based on the trial and error method. As Lavoie himself admits, if it is true that 'both Hayek and Robbins ridicule the notion of centralizing all the knowledge of technical processes in the ministry of production', it will likewise be true that 'the main purpose of Lange's essay was to deny that such centralized knowledge would be required for a socialist system' (Lavoie, 1985, p. 126). But in Lavoie's view 'the market socialists never properly formulated the Misesian problem of knowledge dispersal that their competitive solution was intended to resolve' (Lavoie, 1985, p. 161); on the contrary, 'the market socialists failed to recognize the essential problem of knowledge dispersal to which Robbins following Mises had drawn attention' (Lavoie, 1985, p. 160). And this is tantamount to refuting the widespread belief that Lange's model was devised in response to the criticisms of Mises, Hayek and Robbins (see Lavoie, 1985, p. 21).

According to Lavoie, Lange mistook the Walrasian general equilibrium model for a true reflection of capitalist reality and wrongly assumed he could easily solve his problem by arguing that the socialist planner would take the place of the Walrasian auctioneer. In Lavoie's view, the Walrasian model does not provide a fair interpretation of the capitalist system and the criticisms of Mises, Robbins and Hayek are equally applicable to Walras's and Lange's neo-classical models. And this is the reason why (still according to Lavoie) neo-classical authors have nothing to object to in Lange's arguments, while the Austrian school, focusing on change and on the role of the entrepreneur, is in a position to blame market socialists for failing to counter Mises' criticisms (see Hayek, 1964, pp. 35–6; Lavoie, 1985, pp. 21–2; Helm, 1989b, pp. 12–25; and Temkin, 1989, pp. 197–206).[43]

Maintaining that the historical relevance of the socialist calculation debate had been thoroughly misinterpreted and that the core issue at stake had not been recognized either by major historians of economic thought such as Knight and Schumpeter or by theoreticians of comparative economic thought such as Ward and Bergson, he asked himself how such eminent thinkers could assume Lange to have sufficiently answered Mises' criticisms. His answer was that 'these interpreters share a very similar training in economics within the neo-classical tradition of Walras and Marshall and that the intellectual background of Mises, Hayek and Robbins is substantially different',[44] although he admitted that certain diverging or completely mistaken interpretations might also be explained with the fact that the discussants had repeatedly changed tack throughout that debate (see Lavoie, 1985, pp. 3–4).

One of the reasons why we have tried to define the Lange–Taylor model as clearly as possible is that it will help us establish if Lavoie's reflections are really convincing and to what extent they may throw light on the real terms of this complex debate.

The point of the 1930s debate that really needs to be reinterpreted (Lavoie contended) is the concept of economic rivalry, that is, competition (see Lavoie, 1985, p. 22). Both Robbins and Mises, he wrote, assumed that rational economic calculation had as its prerequisite a market for capital goods and that such a market was the arena on which private individuals were seen to compete for resources available in limited quantities. In socialism this no longer applies. Socialists want managers to 'play at competition', compete for production factors, sell their products on to the highest bidder, in short, to behave as if they were true entrepreneurs. But the solution of fictitious markets is based on a static conception of choice similar to that behind the Walrasian model, a conception from which disequilibrium exchanges and unforeseen change are altogether excluded and where future events are deemed unimportant (see Lavoie, 1985, pp. 158–60).

While Lange assumed that managers would be in a position to make minimum cost choices, Lavoie objected that the best possible combination of production factors was not to be determined once and for all, but was to be continuously sought after. 'If economic choice is reduced to pure optimization, then the difference between a private owner's and a civil servant's choice disappear. All is merely routine behavior, and the best alternative need only be read off the appropriate cost curves. It would seem in this case to be of little consequence whether the producer is motivated to select the optimal factor combination by private profit or by public conscience' (Lavoie, 1985, p. 159; also see Brus and Laski, 1989, pp. 57–9 and Temkin, 1989, pp. 203–4).

Countering Hayek's criticism that the central planner would never have access to the knowledge that really matters, market socialists argued that this knowledge would just be accessible to a few firm managers or, better still, that the latter would continuously be collecting the relevant information. In Lavoie's view, however, this was not a real answer, because in a system with privately-owned production means the profit target encourages the search for the most efficient production combinations, while in a system with publicly-owned production means those in charge of decision-making are part of a common project and therefore cannot compete with one other (Lavoie, 1985, p. 160; also see Vaughn, 1981).

Lavoie's main point seems to be that socialist managers will never behave like private entrepreneurs out of a sense of duty or commitment to their tasks, but only through the incentive of the profit motive. Yet he also accepts Hayek's view that a model such as Lange's – where price/marginal cost levelling is a general and abstract rule to be observed by everyone (and where the planner is merely expected to enforce its observance) – is by no means a socialist model although it never suggests relying on the profit motive. In other words, a model in which the planner merely establishes general rules and is not expected to allocate resources by distributing them specifically among single firms is not a counterargument, but a full surrender to the Misesian challenge (see Lavoie, 1985, p. 163).

As is well known, in later contributions Hayek distinguished between *nomos* and *thesis*. *Nomos* rules are the *jus* of the ancient Romans: they are abstract general rules which every citizen has to abide by, which have not been deliberately created, but have come about by spontaneous evolution; they are rules of just conduct which are spontaneously observed even before the legislator backs them up with sanctions. *Thesis* rules form the body of statute law, that is, the laws passed by the legislator; they may, but often do not, share the characteristics of *nomos* law; they are not always rules of just conduct, but have usually been deliberately created by the legislator as commands that people are to observe. Thus *nomos* rules are usually negative commands which establish what people must not do, while *thesis* rules are commands to be obeyed, organizational patterns which keep an organization going and, as such, binding only upon the members of the organization itself (see Hayek, 1973c, Chapters 5 and 6). With this distinction in mind, Lavoie argues that these two categories of law seem to be mixed up in socialist projects. According to him Lange and Lerner's rules would appear to have been propounded as part of a central planning system, that is, as *thesis* rules consciously enacted by the planner in order to dictate organizational patterns, but are also intended 'as functional replacements for the unconscious operation of private owners competing for profit under a *nomos* legal system of rules concerning property titles' (Lavoie, 1985, p. 151), while 'the only way in which this substitution of *thesis* for *nomos* rules can be considered plausible', he continues, is to reduce the choices being examined here 'to purely routine optimization under a completely specified ends/means framework, in which case genuine initiative on the part of the rule followers is unnecessary' (Lavoie, 1985, p. 151).

Coming back to this subject a few pages further on, Lavoie eventually concurs with Hayek's criticism that Lange's competitive solution, being based on *nomos*-type rules, is not a socialist proposal, but (as mentioned before) a surrender to Mises' challenge (see Lavoie, 1985, pp. 163–5).

Thus Lavoie's criticisms can be reduced to the following two:

a. if Lange's model is interpreted as one in which private action is not guided by the profit motive, then socialist managers will never be able to imitate private entrepreneurs;
b. if Lange's model is interpreted as one in which private action is guided by the profit motive, then it is no longer a socialist economic model.

As these criticisms have nothing to do with the opposition between the neo-classical and Austrian schools pointed out by Lavoie, even neo-classical economists would evidently be prepared to subscribe to them. In our opinion the first objection is all but ungrounded and encourages us to interpret or adjust Lange's model by explicitly assuming that profit will be used to stimulate socialist managers. Today, in the light of ongoing changes in the former Eastern bloc, there is general agreement among economists that a system of publicly-owned enterprises will never be operated efficiently in the absence of money incentives inducing managers to a greater commitment to their tasks.

As for the second criticism, which we hold to be ungrounded, it will be dealt with in the next chapter and addressed in even further detail in Chapter 5.[45]

3.10 THE SO-CALLED 'INFORMATION PARADIGM' AND THE LATEST CRITICISMS OF THE LANGE MODEL

According to Stiglitz and others, many recent studies have given rise to a new paradigm of economic science known as the 'information paradigm' (see, above all, Stiglitz, 1993 and 1994 and Bowles and Gintis, 1993a). And this new paradigm prompts an additional major criticism of the Lange model which in essence generalizes and further emphasizes the objections raised by the Austrian school.

Until recently, Stiglitz argues, the hallmark of economic science was the so-called 'competitive paradigm', that is, the neo-classical, or Walrasian, perfect competition model. The fullest and most accurate conceptualization of this model is owed to Arrow and Debreu (1954; also see Debreu, 1959), who analyse the conduct of various maximizing agents demanding and supplying goods in a full set of present and future perfect competition markets. As this model is based on a number of extremely stringent assumptions, its ability to explain the world in which we live has been called into question by many economists on account of the fact that its results are misleading as soon as these assumptions are not given.[46] Hence – as Lavoie and many others argued from different perspectives, it follows that all the models of market socialism which are founded on this paradigm (above all Lange's and Taylor's) will be of no help when putting into practice any form of socialism whatsoever.

In Stiglitz's view the main weakness of the neo-classical paradigm (which is also observed when it is used to explain market socialism) is its neglect of a wide range of problems arising in connection with uncertainty and with the need to collect information. In particular, many of the imperfections observed in financial markets can mainly be traced back to fragmentary information. But the role of information has received much attention in today's economic science and the last fifteen years have seen the emergence of a new paradigm, the 'information paradigm', which seems better suited to explain basic aspects of the world in which we live. In addition to such older problems as what, how and for whom to produce, this new paradigm has focused attention on a fourth major issue which until recently had barely been addressed in economic science, namely the issue of how decisions are to be made, who is called upon to make them and how to secure the best decisions in every circumstance. All this, Stiglitz goes on arguing, will probably make a great difference to the theory of socialism, for in case it were always possible to choose the right course of action under every circumstance, the problem of incentives which Lange and Taylor failed to address would be relatively unimportant and none of the models of market socialism would be open to any criticism.

Stiglitz shares Hayek's view that a model in which all the required information is assumed to be available cannot explain the role of prices and markets in transmitting and collecting information; but as Hayek and his followers never propounded any formal models of the market process, he thinks they are not entitled to judge if the market transmits such information more or less efficiently or weigh the merits of planning against those of the market. As Hayek did not (and indeed could not) use Pareto's optimality criterion, he wonders what criteria he adopted when making comparisons between different markets (see Stiglitz, 1994, pp. 24–5).

On the subject of incentives Stiglitz accepts and even develops upon the main criticism raised against the Langean model of market socialism, namely its scant attention to incentives (Stiglitz, 1994, p. 66). Analysing the neo-classical theory of the firm, he argues that it totally underrated the importance of incentives because it failed to address such issues as monitoring (the need for the employer to ascertain if his/her workers are properly carrying out their tasks) and worker motivation and he also blames it for assuming the existence of prices for all types of commodities and labour without inquiring into the way buyers ascertain the quality levels of products, how firms manage to produce the articles they design, and so on. From this he draws the conclusion that, not unlike the paradigm on which it is based, the Lange model leaves major economic problems on the doorstep (see Stiglitz, 1994, p. 104).

In actual fact Stiglitz holds that the paradigm of perfect competition goes off the beaten track in three places. First, by assuming that an employer would incur no costs in verifying the commitment of his/her workers, the model takes it for granted that important variables can be monitored at no cost. Second, it fails to address the problem of how decisions are made. Third, the Walrasian paradigm disregards the costs involved in contract management and monitoring (in the absence of which managers might pursue their own interest instead of the owners', borrowers might fail to reimburse loans received, supplies might not be delivered within the agreed deadlines, and so on). And these, he maintains, are also the weak points of the Lange model.

Furthermore, Stiglitz argues that Langean market socialism underrates, not only the importance of incentives, but also the role of prices, which do not and *cannot* work in the manner assumed in the standard model (Stiglitz, 1994, p. 83). Very often, he says, the required information is generated, not by the price mechanism, but by direct dealings between the parties involved in an exchange. Contracts and reputation play a central role in economic relations and aspects and agreements unrelated to price are often as important as those

concerning prices. On closer analysis the myth that wants capitalist economic relations to be governed above all by price is in many respects misleading. First of all it seems to overlook that a substantial part of economic activity takes place inside firms (and that this activity is only in part governed by prices). Second, it fails to recognize that firms draw their information from numerous other sources in addition to price, for example from their own and other firms' inventory levels. Third, it ignores many aspects of economic transactions which have nothing to do with price (Stiglitz, 1994, pp. 249–50).

The collapse of the myth that economic relations in the market are governed mainly by price is tantamount to the collapse of the myth that these relations are anonymous. In the post-Walrasian paradigm exchange is viewed as a non-impersonal strategic relationship. In the new paradigm the parties to an exchange will often enter into long-term contracts with their partners although this implies renouncing price flexibility. But long-term contracts are based on personal relationships in which the human qualities of the parties to an exchange are an important component. Thus in the post-Walrasian paradigm markets do not generate impersonal relationships between inanimate things, but bilateral exchanges between living individuals in which each party weighs the responses of the other party against his/her own. In this paradigm the typical pattern that governs economic activity is not the behaviour of an operator acting within an external world viewed as given, but the relations between individuals interacting with each other (see Bowles and Gintis, 1993b, p. 7).

The above reflections have all but negligible implications. The major role of information and the fact that very often it is not transmitted by the price mechanism leads to the abandonment of the idea that markets tend, as a rule, towards equilibrium. As Bowles and Gintis have argued,

> equilibrium is seldom reached in non-Walrasian markets because, as a rule, an operator tackling an endogenous problem such as the performance of a contract will not think it convenient to make an offer equivalent to the best alternative available to his partner. If, in fact, such an offer were accepted, the partner would be indifferent to finalizing the exchange and there would be no means of using the termination of the contract as a threat to force through the actual performance of the agreements entered into. (Bowles and Gintis, 1993a, p. 7)

This obviously means that the basic theorems of welfare economics are no longer acceptable. None the less we are aware that it was precisely these theorems that led Lange and Lerner to propound their celebrated equivalence theorem, according to which (when firms follow the rules of perfect competition) market socialism achieves a Pareto optimum. It follows, therefore, that Lange and Lerner's contention that market socialism is a social organization capable of maximizing collective welfare is unacceptable.

But this is not all. The new information paradigm shows that 'market failures' are the rule and occur throughout the economic system: in every transaction between private individuals, market imperfections and imperfect information result in inefficiencies which, though negligible in single cases, acquire momentum and importance in the aggregate. Furthermore the market failures highlighted by the new paradigm differ from those (for instance pollution) usually addressed in standard welfare theory and cannot be removed by implementing suitable economic policies. They destroy all confidence not only in the efficient working of market mechanisms, but even in the state's ability to correct these market imperfections. Moreover, as the theoreticians of market socialism did not set out from the analysis of these market failures and their possible remedies, but postulated its implementation within an idealized institutional framework, there is no reason to assume that a Lange-style market socialism would mark any advancement over capitalism.

In other words, it is possible to conclude that the main inferences prompted by the information paradigm, that is, the finding that markets seldom reach equilibrium and that externalities abound everywhere,[47] seem to suggest a strong argument in favour of planning: if the market does not work (as socialists have long been arguing), it will have to be replaced by centrally-directed choices. But central authorities are barely able to collect, process and disperse information and the state itself is not always capable of redressing market imbalances. Consequently there is no reason to assume that centralization will be a better solution than decentralization (see Stiglitz, 1994, Chapter 9).[48]

NOTES

1. On this problem see, for example, Dickinson (1933); Dobb (1939a); Schumpeter (1942, pp. 172 ff.); Sabattini (1972, pp. 51–4 and 125–33); Domar (1974, p. 1306, note 10).
2. According to Roemer and Silvestre, Lange's contribution to the theory of market socialism has often been judged 'archaic' because it ignores the problem of incentives (see Roemer and Silvestre, 1993, p. 108). From much the same perspective, in 1940 Sikes argued that the Lange model could not be implemented in practice (see Sikes, 1940, p. 280), while in 1983 Samuelson judged Schumpeter somewhat naive for decreeing Lange and Lerner's victory over Mises on the question of economic calculation (see Samuelson, 1983, p. 176).
3. Dickinson (1933) was probably the first to suggest that the complex problems the central Planning Bureau had to tackle if it wanted to allocate resources rationally could be solved by recourse to 'mathematical' methods. None the less the best-known and most authoritative proposal for substituting the market with the computer is owed to Lange and was briefly expounded in 1965 (see Lange, 1965).
4. This is also the opinion of those neo-Marxists who, in line with Baran and Sweezy, focus attention on the problem of *surplus* and criticize capitalism above all for its inherent waste and irrationality; in opposition to traditional Marxist thought, however, they argue that the substitution of planning for the market mechanism does not imply negating that the resource allocation problem is the economic problem *par excellence* (see Stanfield, 1973, p. 132). We shall come back to this subject further on.

5. For different opinions on this point see, for example, Nussbaumer (1959); Kantorovic (1965, p. 219); Sik (1974, p. 34); Bryson (1976, pp. 31–45).
6. A case in point is demand for cars, which grows substantially when the building of a closely-meshed road network couples with inadequate public transport infrastructures in creating the need for a private car. As demand for cars is seen to rise, however, individuals are prevented from making a rational use of their property: as everyone frantically seeks to do everything at a rush, we all end up stuck in traffic jams for hours. And this is only one of the many possible examples.
7. This is tantamount to admitting that the Planning Bureau may keep track of past consumer choices and take them as the main, or even exclusive basis for its decision-making. See further on.
8. See Lange (1958b, pp. 169–74, and 1964, pp. 47–55).
9. According to Lange, however, the introduction of computers had radically changed the terms of the problem as compared to the situation in Barone's times.
10. On the subject of reform in Eastern European countries, Nove wrote: 'Some Western critics imagined that the mathematical school would be "centralizers". This is not the case, and for at least one good reason; a fully disaggregated central plan would have to include literally millions of separately identifiable commodities, produced by hundreds of thousands of enterprises of all sizes, involving millions of production-and-supply links through time and requiring a quite unmanageable volume of information. Furthermore, most of this information – e.g. as to the detailed product mix – itself arises out of market relations. So the bulk of Soviet mathematical economists support the "socialist market" solution' (see Nove, 1970, p. 351; also see Brus, 1964, p. 180).
11. Concerning this, see, for example, Napoleoni (1962b and 1963, pp. 632 ff.); Mandel (1962, vol. 2, pp. 396 ff.); Lange (1965); Stanfield (1973, pp. 131–6); and Abdel-Fadil (1975, pp. 120 ff.).
12. On the part 'experts' play in hampering participation and, thus, the transformation of society in the socialist direction, see, for example, Bowles (1974).
13. When Hayek argued that Dickinson's contribution (1933) was typical of this second stage, Dickinson had already (the year before) revised his former propositions in an excellent, though relatively little known work entitled *The Economics of Socialism* (see Dickinson, 1939).
14. According to Hayek the myth that Pareto and Barone 'settled' the socialist calculation problem goes back to Schumpeter (see Hayek, 1945a, p. 90, quoted by Temkin, 1989).
15. Consequently A. Buchanan is wrong when he maintains that Hayek failed to understand, or at least to highlight, that the planner of the Lange–Taylor market socialism model did not have to collect myriads of data because it was no longer necessary to solve the complex system of equations 'at the desk' (see Buchanan, 1985, Chapter 4).
16. According to Ioannides, in order to change prices day by day the planners would have to overcome the practical difficulties highlighted in Hayek's criticism of the mathematical solution, namely the problems involved in transferring the knowledge dispersed among individuals to the central authority (see Ioannides, 1992, p. 158). On this subject, also see Kaldor (1932, p. 280).
17. The importance of the problem raised by Hayek is self-evident. For a recent analysis of this point, see Stiglitz (1993), and also Makowski and Ostroy (1993, pp. 79–80).
18. Broadly speaking, according to Hayek a producer will only be able to achieve minimum cost combinations if he/she is authorized to price his/her products by him/herself (see

Hayek, 1940, pp. 194–7); but there is no general agreement on this (see Bardhan and Roemer, 1993b, p. 5).

19. In Ioannides' view, from Lange's propositions on the parametric role of prices it follows that a manager will have to base his/her transactions only on current prices, regardless of expectations, and this ends up by turning every manager into a typical *price-taker* (in the spirit of the static neo-classical model) (see Ioannides, 1992, p. 159).
20. See Hayek (1940, p. 199). For an analysis of this criticism, which emphasizes the subjective nature of costs, see Vaughn (1981, pp. xxii–xxvi).
21. We do not see why a successful investment project should not be rewarded by promoting the manager or granting him/her a share in the profits. Kornai and others emphasized that the managers of socialist enterprises very seldom incurred any penalties when their investment projects failed (see Kornai, 1986, p. 1698).
22. See, for instance, Vaughn (1980, p. 545 and 1994, pp. 49–61). Also in Lavoie's view the 'essence' of Hayek's criticism of all possible forms of market socialism lies in the fact that the information that really counts is not only dispersed, but also 'inarticulate' (see Lavoie, 1985, pp. 215–21).
23. Stiglitz recently observed that the basic shortcomings inherent in Lange's idea of socialism are due to the fact that he based his model on the Arrow–Debreu model of general economic equilibrium, that is, a misleading description of market economies (see Stiglitz, 1993, p. 21). This same contention is discussed in detail in Makowski and Ostroy (1993).
24. According to McCormick, the contention that a socialist model will never work effectively because the central authority is unable to collect the information dispersed among a large number of people is not clearly expounded in Hayek's articles of the 1930s because this objection only came to him following the publication of his article 'Economics and Knowledge' (see Hayek, 1937). The ideas contained in it were further elaborated upon in a later article published in 1945 and entitled 'The Use of Knowledge in Society' (see McCormick, 1992, pp. 140–41).
25. A central idea of Hayek's in this respect is that 'the argument in favor of competition does not rest on the conditions that would exist if it were perfect' (Hayek, 1948b, p. 104). But an even more shrewd observation is that 'perfect' competition actually involves the absence of any competition whatsoever (see Hayek, 1948b, p. 96). On this point others have rightly observed that so long as the auctioneer of Walras's model is assumed to act as a coordinator collecting information, fixing prices and changing them without incurring the relevant costs, there is no reason why these functions could not be performed equally well by a planner (see Helm, 1989b, pp. 14–15).
26. In addition to Hayek's own article on the 'competitive solution', his objections to the Walrasian model are also thoroughly discussed in Hayek (1937, 1945a, 1945b and 1948b) and in Vaughn (1980, pp. 543–4). While admitting that these objections are crucial to Hayek's overall criticism of socialism (see Vaughn, 1980, p. 544 and 1994, pp. 49–61), the latter also emphasizes that they are dispersed in Hayek's writings and must consequently be reconstructed. Caldwell's opinion concerning the above-mentioned articles is that they further elaborate upon arguments that Hayek had first set forth when dealing with the irrationality of centralized planning (see Caldwell, 1988, p. 535). On the same subject, also see Gray (1989, pp. 129–35) and Lavoie. The latter again objected to the use of Walras's model in a number of well-documented analyses (see Lavoie, 1985, 1986 and 1990).
27. Mises had already dealt again with the problem of economic calculation in socialism in a 1924 article concerned with criticizing Polanyi's proposal of 'guild socialism' and E. Heimann (see Mises, 1932 and 1951, pp. 473–8).

28. According to Lavoie and Kornai the notion that a market economy has its core assumption in the rivalry between firms competing for actual markets was not addressed in the subsequent phases of the debate on the economic theory of socialism (see Kornai, 1986, p. 1727, and para. 9 further on).
29. Also see Mises (1956, pp. 34 ff.).
30. For a critical review of Mises' objections, see Napoleoni (1962b) and Temkin (1989, pp. 203–5).
31. Radical criticisms of market socialism such as Mises' and Halm's are still frequent today and there are also some who still hold that market socialism is an attempt 'to square the circle' (see Barry, 1993, p. 4).
32. A different view is expressed in Lange (1958b, pp. 177–9, and 1964, pp. 53–4).
33. Not only Lange, but almost all the participants in the debate of the 1930s failed to tackle this issue. This strikes us as surprising because monitoring is an essential function in all bureaucratic organizations and there is no reason to believe that the kind of organization theorized by Lange should be an exception to the rule (see Ward, 1967, p. 37). As for the problem of incentives, Landauer pointed out that Lange's model marked a regression as compared to Heimann's 1932 model, which rightly envisaged incentives for managers (see Landauer, 1959, p. 1656).
34. Although Lange did not address this point in his 1936–37 article, we may assume that neither Lange nor other socialist economic thinkers of his time were prepared to accept profit as a 'motive for action' in a socialist system (see Dobb, 1939a, pp. 240–41). Nevertheless, in later years Lange's proposal was interpreted exactly in this way (see, among others, Baumol, 1961, pp. 422–3).
35. On the subject, also see Lerner (1936, pp. 75–6); Lange (1937, p. 144, 1956, pp. 438 ff.); Dobb (1969, pp. 150–51); Abdel-Fadil (1975, p. 134); and Vaughn (1981).
36. See Bettelheim (1966, pp. 46–7); Dickinson (1939, pp. 113 ff.); Bergson (1948, pp. 534–5); Horvat (1964, p. 31). As Lange and Lerner's model is based, not on existing conditions, but merely on the hypothesis of perfect competition equilibrium, Drewnowski and others described it as exclusively normative, that is, incapable of explaining the real conditions of socialist countries (see Drewnowski, 1961, pp. 30–31; also see Bergson, 1948, p. 549).

    The practicability of the Lange and Lerner rule was also called into question from the perspective of the uncertainty issue raised by Hayek. Wiseman, for example, argued that when the future is supposed to be unknown, as it actually is, it is no longer possible to interpret opportunity cost only as a problem of scarcity; for when prices and quantities must be estimated, the problem of cost is solved by choosing from among a variety of alternative action plans based on estimates of costs and revenues. In such a case the marginal cost of a given decision is the revenue of the best alternative that is sacrificed upon choosing another alternative. But when marginal cost is thus defined, it is no longer possible to ascertain whether a firm is actually observing the rule of Lange and Lerner, because marginal costs are estimated based on subjective judgements (see Wiseman, 1953, pp. 121–4).

    When Roberts objected that uncertainty involves a value judgement which is absent from Lange's formulation, he was speaking from much the same perspective. According to him, there is uncertainty also when prices are fixed by the Central Planning Bureau; indeed, as pricing is based on the trial and error method, everybody is aware that prices will be continuously adjusted and managers do not make their choices based on given prices (as Lange instead assumed). As a matter of fact managers make their choices by weighing them against their estimates concerning the probable success of different alternative actions (see Roberts, 1971, pp. 569–71).

Both Wiseman's and Roberts's arguments are concerned with long-term problems rather than the short-term problems addressed in Lange's model. Although there is no denying that prices will change, the planning authorities can lessen the uncertainty by keeping them stable at least for certain periods of time. Hence the objections seem to be confined to investment choices, which even Lange did not think were decisively influenced by his rule.

37. See, for example, Hayek (1940, pp. 194–7); Bergson (1948, pp. 534–5); Baumol (1961, pp. 257–8); Abdel-Fadil (1975, pp. 133–4). Setting out from the fact that firms observing the Lange and Lerner rule may at times conduct business at a loss, some authors concluded that the system under review here is decisively superior to the capitalist one because (as every socialist model) it allows losses to be socialized (see, for example, Bettelheim, 1966, p. 45).
38. See Boiteux (1951); Manne (1952); Baumol and Bradford (1970); Bryson (1976, pp. 56–9). Lerner (1977, pp. 237–8) sheds further light on the problem.
39. A detailed analysis of this issue lies outside the scope of this book. However, on the subject of the alleged superiority of an economic system applying the Lange and Lerner rule over one which does not, one may mention a number of empirical studies conducted to assess the extent to which resources are wasted in capitalist firms (which usually do not operate in a perfect competition market) that do not pump up their output to a volume which equals marginal cost and market price. As a matter of fact, such waste was estimated at a negligible share, that is, one per cent, of national income. See, in particular, Leibenstein (1966).
40. Bardhan and Roemer are probably the only ones to have pointed to this contradiction in Lange's model. As they see it, Lange himself justified his decision to leave the pricing of capital goods to the planner (a) with the high social costs involved in the search for equilibrium prices (owing to endless adjustments and readjustments and the inevitable failure of weaker firms), (b) with the fact that the central planning authority will find equilibrium prices more rapidly. Both of these are far from convincing arguments. As Lange failed to show that there is any significant difference between consumer goods and capital goods, Bardhan and Roemer rightly suggested that this contradiction could be rationally explained only by assuming that Lange did not express his real thought because of political reasons (he had already carried his criticism of command economy to extremes and at that time it was impossible, or at least unwise, to recommend any further advancement towards a market economy) (see Bardhan and Roemer, 1993b, p. 6; also see Roemer and Silvestre, 1993, p. 109).
41. In Bardhan and Roemer's recent proposal a large group of publicly-owned banks may have controlling interests in major firms (see Bardhan and Roemer, 1992).
42. Other models of Langean market socialism were recently proposed, for example, in Bardhan and Roemer (1992 and 1994) and in essays published in Bardhan and Roemer (1993a).
43. According to Blaug, the socialist calculation debate taught a whole generation of economists how to assess the supposed practical relevance of the Walrasian general equilibrium theory (see Blaug, 1993, p. 1570). A similar contention is expressed in Stiglitz (1993, p. 21 and 1994, pp. 2 and 13); for Stiglitz's opinion on the subject, see Section 10 in this chapter.
44. See Lavoie (1985, p. 3). Lavoie's entire book is based on the assumption that the debate of the 1930s was misinterpreted because the propositions of the Austrian school were either not fully undertaken or altogether disregarded (see the introduction and Chapter VI). Nelson (1981, p. 95, note), Ioannides (1992, p. 160), Blaug (1993, p. 1571), Foss (1993, pp. 148–9 and 153–6), and so on, in essence share this view. Also see Stiglitz

(1993), and Makowski and Ostroy (1993). When they associated Mises with Hayek and Robbins, Lavoie and the other authors just mentioned fail to emphasize that Mises criticized socialism from a rationalistic and utilitarian perspective which Hayek rejected (see Hayek, 1994, pp. 72–3 and Matteucci, 1995, p. 22).
45. Recent criticisms of the Lange–Taylor models are found in Kornai (1993) and Schleifer and Vishny (1994).
46. Even those who hold perfect competition to be an unrealistic model usually have recourse to it when identifying cases of 'market failure'. A case in point is Bator's by now classical analysis (Bator, 1958).
47. The observation that externalities abound everywhere is also typical of many Marxist authors (see, for example, Mc Nally, 1993, pp. 198–9).
48. The post-Walrasian paradigm (which is mainly intended to refute the impersonality of the market and cannot be analysed in detail here) calls into question the methodological aspects of the neo-classical model and re-evaluates the method of the 'dependence on the previous path' (a process which is typical of biology and geology, rather than of physics). This method was handed down to us by Marx and is part of the most valuable heritage of this great revolutionary thinker.

4. Socialism with autonomous firms

In my opinion, the most important fields in which the human spirit expresses itself, religion, philosophy, the arts, poetry, science, lie beside the state, outside and beyond it, and are very often in conflict with it. (Thomas Mann)

4.1 INTRODUCTION

As stated earlier in this book, the distinction between the *theoretical* possibility for socialism to work and the difficulties inherent in its *practical* implementation was repeatedly made during the socialist calculation debate. Initially, critics of socialism such as Mises denied that a system with state-owned capital goods could work in theory, but following the publication of Taylor's and Dickinson's contributions economists ceased arguing that socialism was unable to provide a satisfactory theoretical answer to the problem of rationally allocating resources.[1] Thus there is general agreement that from the 1930s onwards this debate began to centre around what prospects socialism had to work in *practice.*

On the opposite front there are some who contend that the debate of the 1930s was highly abstract and was only concerned with establishing whether socialism could work in theory. As mentioned before, few if any organizational issues were dealt with, since 'practical' problems were thought to be of no use in showing whether any socialist model, including market socialism, could be concretely implemented.[2]

In point of fact both these stances should be rejected, since numerous 'neo-institutionalist' studies have recently shown that very often organizational issues also have distinctive theoretical implications and deserve careful analysis.[3]

Here we mainly want to stress that the need for a practicable model of socialism induced Lange to a radical turnaround from his previous position and to propose a model of socialism which was easier to achieve in practice. And it is this Langean model of socialism (which departs from the Lange–Taylor model already discussed in Section 8 of the previous chapter) that we are going to analyse in this chapter.

4.2 LANGE ON THE ECONOMIC LAWS IN SOCIALISM

Apart from a short review of Dickinson's book entitled *The Economics of Socialism,* Lange did not concern himself with the economic theory of socialism for many years after the publication of his 1936–37 essay. When he was asked to prepare a second edition of that essay in 1945, he informed his publisher (after some hesitation) that his ideas had changed so thoroughly that revising the article would be an unwise compromise (see Kowalick, 1987).[4] Until recently even professional economists were in the dark concerning the new direction Lange's ideas had taken during that period, but now the two lectures he gave in Chicago and later published in 1987 provide some evidence of the changes. These lectures clearly show that Lange had been carrying his 1936–37 arguments to their logical extremes and had fully embraced the idea of market socialism with autonomous firms (Lange, 1942).[5] In spite of a few uncertainties, his 1942 lectures and, to a greater extent, the monographic treatise *Political Economy* which he began in 1957 can thus illustrate the model of market socialism that Lange had been conceptualizing in the later years of his theoretical activity.[6]

As can be inferred from the treatise mentioned above, in Lange's view 'the evolution of the capitalist mode of production itself prepared conditions in which the new socialist system of relations of production becomes both possible and necessary' (Lange, 1958b, p. 80). According to Marx and Engels, in fact, capitalism is characterized by a conflict between the social organization of single firms and the social anarchy observed in the production system as a whole; but as enterprises are seen to grow, economic activity shows a marked trend towards socialization until that conflict is fully resolved when firms are taken over by the state (see Lange, 1968, pp. 33–42).

Unlike other socialist authors, Lange was persuaded that even when firms are state owned, economic laws continue to function as objective laws working 'independently of human will and consciousness' (Lange, 1958b, p. 82), that despite their stochastic and approximate nature, these laws are always objective in that they reflect actual proprieties of economic processes (see Lange, 1958b, p. 54) and 'are not a product of human consciousness or will. They operate regardless of whether people are conscious of them or not, and regardless of whether or not they conform to human intentions' (Lange, 1958b, p. 54). In line with Marx and Engels, Lange thus stressed the notion that although historical and social evolution results from conscious and deliberate actions, it operates like a natural process[7] and he insisted that this applied both to capitalism and to socialism. In socialism, he wrote, 'the technical and balance laws of human behaviour and the law of interplay of human actions continue to operate objectively, independently of human will and consciousness' (Lange, 1958b,

p. 82), because they are characteristics that neither the socialist production mode nor other modes can discard (also see Lange, 1957, pp. 333–8).

Nevertheless the social ownership of production brings about conditions in which these laws generate the effects intended by man (see Lange, 1958b, p. 82). According to Engels, 'the laws of his own social action hitherto standing face to face with man as laws of nature foreign to, and dominating him, will then be used with full understanding, and so mastered by him' (Engels, 1878, p. 392). When commenting on this passage, Lange observed that one had to distinguish between the spontaneous working of economic laws and their objective nature and clarify that public ownership of all enterprises would neither prevent economic laws from functioning nor deprive them of their mechanical and objective nature, but only create conditions in which they could operate in line with human intentions (see Lange, 1958b, p. 83). In a socialist system economics laws are subjected to human control while preserving their objectiveness. The spontaneous operation of this process, he continued, cannot be side-stepped, because there are no means of eliminating the working of economic laws. The only thing the planner can do is to prepare conditions in which (to quote Engels again) 'social causes set in movement by him' will bring about the intended effects (see Lange, 1958b, p. 83; also see 1957, pp. 334–6).

What we mainly want to point out here, however, is that in those years Lange clearly stressed the notion that a socialist economy was to have autonomously-managed public enterprises. The following is a passage from his 1942 lectures:

> The socialist idea is that, though socialism advocates public enterprise, it does not advocate government enterprise and activity in the sense indicated, but rather wants to see the public institutions which are charged with the operation of our productive system to be autonomous institutions, independent from the political state. (Lange, 1942, p. 34)

As Lange directed the economic policies of the centrally-planned Polish state in a responsible position, this may at times have prevented him from stating his thought clearly; but also in the works he wrote at that time he made it clear that:

> The basis of the management of the national economy should be the autonomous socialist enterprise. Such enterprises should function as teams of people implementing common social tasks, personally interested in the favourable outcome of these tasks, and linked together by a feeling of friendly co-operation. In a State-owned economy, socialist enterprises are trustees of property belonging to the nation as a whole, which they manage autonomously within the framework of the national economic plan. (Lange, 1956, p. 438)

There is no doubt, therefore, that at least starting from 1952 Lange had conceived the idea that socialist enterprises were to be autonomously managed.

4.3 LANGE AND THE PUBLIC ENTERPRISE

In Lange's view, public enterprises are also to be managed in accordance with strict efficiency criteria; firms will be nationalized only in order to keep in check the economic power of the bourgeois class, that is, private capital, and not to substitute one kind of management for another. In other words, a socialist system will nationalize firms because it needs effective economic policies not conflicting with private interests, in order to enable the public hand to use its levers effectively, but not to substitute 'administrative methods' for the market.

The implementation of the model Lange had in mind does not require the nationalization of all productive means. In his 1942 lectures he wrote: 'It is more or less agreed among contemporary socialists that this purpose of maximizing social welfare requires today collective ownership and operation of a major part of the productive system, and namely of that part which today is operated in opposition to the exigencies and the requirements of social welfare' (Lange, 1942, p. 4). In other words, in Lange's opinion to implement the model he has in mind it will suffice to introduce a strong sector of public enterprises because what is really needed is to keep in check private capital in such a way as to enable the state to implement effective economic policies (without recourse to 'administrative methods') by merely using the levers available in the market.

Nevertheless it cannot be said that Lange shared the view that the private or public nature of property is of no great consequence:

> The basic conditions for controlling the mode of operation of social formation is the establishment of social ownership of the principal means of production. This makes it possible to set economic stimuli so that people react to them in conformity with the will of organised society. When this is so, the economic laws of human behaviour operate in a way intended by man ... Social ownership of the means of production eliminates the antagonistic character of production relations and at the same time removes the obstacle formed by privileged, vested class interests which oppose any attempt to make economic laws operate in a way intended by, and in conformity with the will of the whole society. (Lange, 1958b, pp. 81–2)

In short, Lange's contention is that once the main means of production have been nationalized, state-owned enterprises must become the mainstay of the economic system and must be run effectively, in keeping with the economic principle of minimum cost, granting managers and workers shares in operating incomes. This is possible only if socialist enterprises are run in the same way as capitalist enterprises, that is, with a view to maximizing profits. More exactly, when – in his 1942 lectures – he theorized a form of market socialism with *fully autonomous* enterprises, he argued that in the ideal society he had in mind there was no room for the private profit motive (see Lange, 1942, p. 23); but in 1957 he spoke of autonomous firms relying on a system of market incentives (see Lange, 1957, pp. 338–40) and in his treatise on *Political Economy* he wrote: 'the category of profit is retained in socialist enterprises, but ceases to be the ultimate end of its activity and becomes the means of subordination to the general social end of the plan. Profit serves as a stimulus to the completion of the planned targets and as a test of how far the economic principle is observed' (Lange, 1958b, p. 178). And when, later on, Lange returned to the subject of incentives, he went so far as to contend that progress in socialist countries was generally hampered by the lack of suitable economic incentives (see Lange, 1962a, p. 19). Although in his 1962 article he again stressed the automatic and objective operation of economic laws and the need for socialist planners to obey them, he argued that planning could draw definite advantages from the automatic responses of people to given incentives (see Lange, 1962a, p. 24).

Even though incentives are linked to the profit motive, in state-owned enterprises private interests no longer impede the implementation of economic policies framed with a view to achieving social objectives; on the contrary, in public enterprises the profit motive acts in such a way that the laws governing the behaviour of workers and managers end up by operating in accordance with the intentions and objectives of the community. And this is the reason why public enterprises can simultaneously be the tool for implementing socialism and maximizing profit.

4.4 THE ROLE OF COMPUTERS IN MARKET SOCIALISM: FURTHER OBSERVATIONS

These propositions of Lange's are little known also because in a short but more widely circulated article published in 1965 (and already mentioned above in Section 2 of Chapter 3) he propounded different ideas. In this article he wrote that if he had been obliged to revise his 1936–37 article containing his reply to Hayek and Robbins, the progress in information technology would have induced him to point out that the system of equations which the market solves in a very long and complex process could be solved by a computer in just a few seconds. And then he added: 'The market process with its cumbersome *tâtonnements* appears old-fashioned. Indeed, it may be considered as a

computing device of the pre-electronic age' (see Lange, 1965, p. 158).[8] Yet even in that article he spelt it out in bold letters that:

> In all socialist countries (with the exception of certain periods when rationing was used) consumers' goods are distributed to the population by means of the market. Here, the market is an existing social institution and it is useless to apply an alternative accounting device. The electronic computer can be applied for purposes of prognostication but the computed forecasts have later to be confirmed by the actual working of the market. (Lange, 1965, p. 160)

Although the four-page article of 1965 can hardly be supposed to refute the propositions Lange set forth in his much more carefully considered treatise on *Political Economy*,[9] it cannot altogether be excluded that by 1965 the vivid impression of the progress in computer technology had led Lange to change his mind (Temkin, 1989, notes 4 and 6).[10]

Be that as it may, Lange's defence of computer-aided planning induces us to underline a point which seems to be very important. As has been mentioned above and will be further discussed in the next section, the main criticisms of the centralized Soviet planning model are still those of the Austrian school of economics or, more generally, of those who contend that the central planner is unable to collect all the scattered information required to allocate resources in line with rational criteria. According to the economists of the Austrian school, to contend that the planner must solve the general economic equilibrium equations which reflect the choices of consumers and firms is to view this problem from the wrong perspective; even considering the problem from a Walrasian perspective, it must be emphasized that the real difficulties do not lie in *solving* the general economic equilibrium equations, but in collecting the data needed to *write them down.*

This is the point Lavoie made effectively clear when he distinguished between the 'calculation argument' (collecting the data required to fix equilibrium prices) and the 'computation argument' (solving a system of equations which has already been worked out). And Lavoie repeated time and again that all the criticisms of the Soviet system arose from the former perspective. According to this author, when Hayek and, above all, Robbins highlighted the difficulties the planner would encounter in solving a system containing millions of equations, they added a further argument (the 'computation argument') to the main objection (the 'calculation argument') they themselves and all critics of socialism had previously raised against centralized planning. But neither Hayek nor Robbins ever deemed this second issue to be of any great weight (see Lavoie, 1985, pp. 85–92; also see Lavoie, 1990).

In Lavoie's view, the computation problem had received great attention especially in Barone's approach. As will be remembered, Barone observed that it was not enough for the Ministry of Production to work out the system of equilibrium equations which reflected the choices of consumers and firms, because the Ministry also had to deal with the much more difficult task of solving those equations: 'Many of the writers who have criticised collectivism have hesitated to use as evidence the practical difficulties in establishing on paper the various equivalents; but it seems they have not perceived what really are the difficulties – or more frankly, the impossibility – of solving such equations *a priori*' (Barone, 1908, p. 287).

Let us emphasize again that neither Hayek nor Robbins attached much importance to the computation argument. Consequently the fact that socialists responded to Hayek's and Robbins's criticisms by explaining how the computation problem could be solved cannot be traced back to the theses propounded by those two authors, but only to the fact that by including the English version of Barone's 1908 article in his celebrated *Collectivist Economic Planning*, Hayek had appeared to suggest that he shared its basic conclusions (see Lavoie, 1985, p. 91).

Also in the light of what has just been said, therefore, it is barely possible to believe Lange when he stated that if he had revised his earlier article in 1965, that is, thirty years after its first publication, he would have given much more attention to the computation problem. Writing under the pressure of Hayek's criticisms, Lange was perfectly aware that the main difficulty the planner had to tackle was not the computation problem, but the difficulty involved in what Lavoie later termed the 'calculation problem'.[11]

4.5 THE SO-CALLED 'HUNGARIAN MODEL'

The model of socialism with autonomous firms which has been discussed in the previous paragraphs (and which, we repeat, differs from the 'Lange–Taylor model' we dealt with in Section 8 of the previous chapter) has at times been referred to as the 'Hungarian model' because it was partly implemented in Hungary after 1968. In that year the Hungarian government adopted a set of provisions which greatly strengthened the role of the market in allocating resources and resulted in what was later viewed as the earliest model of market socialism ever implemented. The centralized planning system with direct instructions to firms was almost completely dismantled and firms were granted full autonomy. The price system was totally liberalized and the targets of the five-year plan were maintained for just a few products; the planning instruments were turned into mere guidelines and were no longer mandatory. In order to guarantee that firms were efficiently run, managers and workers were made eligible for substantial rewards linked to the profits of firms' operations (or subjected to penalties in the event of failures). About half the investments were left to the initiative of individual firms and were funded by providing bank financings. Firms were also left free to purchase and sell abroad. Lastly the government authorized the establishment of small private firms and provided substantial incentives to cooperatives.

None the less the government maintained substantial control over the economy because it reserved for itself the task of establishing new firms, deciding on major investments and monitoring decentralized investment projects through the banking system. Moreover, the pay structure was centrally devised and foreign business continued to be conducted, in the main, by the state (see, among others, Friss, 1969; Nove, 1970; Gadò, 1972; Hare, Radice and Swain, 1981; Kornai, 1986; Brus and Laski, 1989, Chapter 6; and Bauer, 1990).

Numerous observers confirmed that the New Economic Model was successfully implemented (see, among others, Berend, 1977; Czikos-Nagy, 1978; and Nove, 1983, pp. 123–33); but it was only a partial reform which did not take root successfully.[12]

To quote Nove: 'It is very important for anyone thinking seriously about "feasible" socialism to study carefully the economic and social history of the Hungarian reform, and also their effects on the political structure' (Nove, 1983, p. 133). What is interesting here, however, is not so much a discussion of the historical evolution of the Hungarian model, which is inextricably bound up with the Soviet model, but a theoretical analysis of the ideal type represented by the Hungarian New Economic Model. This model was a historical example which enjoyed a certain degree of success and we will refer to it from here on as 'managerial socialism'.

Consequently it will be worth outlining the main traits of the model of socialism which Lange proposed in his later writings and which was put into practice for the first time, albeit partially and rather imperfectly, with the launching of the New Economic Model in Hungary. The characteristic elements of this model, which is one of two main forms of socialism with autonomous firms, are as follows:

a. firms are publicly owned;
b. the prices of all goods are freely fixed by firms and the goods themselves are purchased and sold in the market in line with utility and profit calculations;
c. the pay structure is laid down in accordance with democratic political choices and demand for and supply of labour in single job categories are balanced out by hiring workers through public competitive examinations;
d. the state pays managers and workers fixed salaries and wages, but managers and possibly also workers receive shares of their firms' profits and incur part of the losses;

e. managers are initially appointed by public competitive examinations, but are then promoted and moved from one firm to another on the basis of the results of their operations;
f. investments are decided and made by single firms, although a few investment decisions which are deemed specially important may be made by the planning department;
g. the net profits earned by firms after the deduction of the shares payable to managers are used to finance investments or for social purposes.

The main differences between this and the 'Lange–Taylor model' discussed in Section 8 of the previous chapter are that in this model profit is always used as an incentive and that prices are freely fixed by individual firms. It will be noted that profit is a hallmark of and an incentive to production activity even though production means are not privately owned. Consequently Lavoie is wrong when he states:

> Where capital ownership is dispersed, the accrual of money profits acts as a signal to guide production toward 'better' factor combinations. Where capital ownership is common, all decision makers are part of a joint project and thus cannot contend with one another in this manner. In such a case there can be no struggle among decision makers in their willingness to risk 'their' capital in various uncertain avenues, but rather 'society's' capital has to be consciously allocated in 'better' ways. (Lavoie, 1985, p. 160)

In our opinion this is the fundamental error in many past criticisms of market socialism and even in Lavoie's more recent contentions, that is, to have failed to see that the separation between firm ownership and control determines that the socialist state may entrust the management of firms to managers chosen for their skills and may guarantee that firms are efficiently run by remunerating them with adequate shares in their profits.

4.6 MARKET SOCIALISM AND ITS CRITICS: THE STATE OF THE DEBATE

It is apparent that, despite inevitable uncertainties, the socialist calculation debate developed steadily towards genuine market socialism.[13] Its evolution falls into four stages which, though following *logically* upon one another, are partly overlapping and it is not always easy to identify which authors best represent them. And the common denominator behind all of them is the gradual, but ever more pronounced transition from a centralized collectivist system to a fully decentralized socialist order. The earliest stage was the one

in which the 'formal similarity' issue, that is, the problem of the basic similarity of capitalism and centralized socialism as far as the rational allocation of resources was concerned, was dealt with and actually solved. The second stage was characterized by the 'mathematical solution' and explored the possibility for the planner to solve the general equilibrium equations 'at the desk'. The third is best termed the stage of the 'Walrasian auctioneer' where the central planner was basically called upon to perform the part assigned by Walras to the auctioneer. The fourth stage is characterized by the proposal for a model of market socialism with autonomous firms, that is, the model we ascribed to Lange's later phase.[14]

Going over the stages of that debate already discussed in detail in the previous chapters, we can say that the first stage was characterized by contributions which emphasized that when the issue to be solved is using scarce resources as efficiently as possible, the problem of economic calculation is the same both in a capitalist system and in a socialist order (that is, broadly speaking, regardless of the institutional context). This was the stage when the focal point of the debate was the 'formal similarity' of capitalism and socialism; following the innovative analyses by Pareto, Wieser and others, it was essentially brought to an end with the publication of Barone's 1908 contribution. The second stage was set in motion by Barone's article and Mises' challenge and was mainly concerned with establishing whether the central planning authority would actually be in a position to solve the system of equilibrium equations in a collectivist order without having recourse to the market proper. This stage witnessed the fiercest contrast between two opposed factions: the socialists maintained that the planner was somehow able to collect the required information without actually having recourse to the market; Hayek and other critics of collectivism argued that the information needed to allocate resources rationally was dispersed and not to be found in any one place, so that no planner would ever be in a position to put it together. Besides Barone's and Mises' contributions, this phase also saw the publication of Taylor's article in 1929, of Hayek's in 1935, and of additional analyses written before Lange's 1936–37 article.

The end of the second stage was marked by the victory of the enemies of collectivism, by the admission that Hayek's forceful arguments concerning the dispersal of the required information could not be countered in the absence of a market proper. None the less, the pressure under which socialists found themselves in their effort to defend the positions they had assumed in this second phase also induced them to beat a strategic retreat and to take up safer and more easily defensible positions. The third stage – which in theory may even be traced back to Taylor's or Barone's contributions and is termed the stage of the 'Walrasian auctioneer' – had as its focal point Lange's 1936–37 contribution and was characterized by the abandonment of the idea that the planner could collect the required information without using the market, that is, without using the Walrasian trial and error method.[15] It has already been mentioned that in Lange's model the prices of capital goods are fixed by the Ministry, but none the less there is little room for planning because both consumers and workers have freedom of choice and the trial and error method of the market is used throughout in order to grant full scope to the choices of households.

It has already been mentioned that in addition to the third we must necessarily assume a fourth stage, that is, the one in which socialist firms are made to fix prices autonomously. In point of fact the model proposed by the socialists of the third stage was open to one major criticism: if prices were to be in keeping with the choices of households and firms, it was natural to think that they would be better fixed by single firms. As discussed above, in this third phase the central planner was called upon to play the part of the Walrasian auctioneer – an imaginary figure created to explain how the *market*, not the plan, works. Consequently, to say that the planner must take the place of the auctioneer is tantamount to saying that he/she must abandon his/her traditional role (which is to allocate resources according to criteria other than those of the market) and leave room for a market proper.

The proposal which was discussed in the fourth stage of the socialist calculation debate is a system of public enterprises allowed to conduct business freely within the market according to criteria of maximum efficiency, in line with Lange's later conceptualizations.[16]

The model of market socialism theorized by Taylor, Lange and Lerner in the third stage still has a number of advocates today and, as will be discussed further on, offers certain advantages over the model of market socialism with autonomous firms. Consequently it can be said that the third stage of the debate was never brought to a close and actually overlaps with the fourth.

What no longer exists, as a result of the collapse of the Soviet system, is the form of socialism that was discussed in the second stage of the debate (as also the model of planometric socialism discussed in Section 3 of Chapter 3), that is, the form of socialism in which the offices of the Central Planning Bureau are engaged in an effort to collect the information required to solve the general economic equilibrium equations 'at the desk'.[17]

4.7 TWO FORMS OF MARKET SOCIALISM

As is inferred from what we have said, there are at least two different types of market socialism which will have to be carefully distinguished from each other: the model of socialism theorized by Taylor, Lange and Lerner and

market socialism with autonomous firms.[18] What are the exact differences between these two kinds of socialism?

It has already been explained that in the Lange–Taylor model, prices are fixed by the planner and consequently constitute a parameter for firms. This enables them to apply the 'Lange and Lerner rule', which is among the basic rules for the achievement of a Pareto optimum. On the contrary, in socialism with autonomous firms prices are fixed either in the market (if this is a perfect-competition one) or by individual firms (if the market has monopolistic traits); but as perfect competition is seldom found in the real world, it will be simpler to say that market socialism with autonomous firms is characterized by the fact that, as a rule, prices are freely fixed by individual firms based on the principle of maximum profit.[19]

When prices are fixed by the managers of firms in keeping with the maximum profit principle, equilibrium will be established at the point where marginal cost equals marginal revenue. And as this is not a Pareto optimality rule, this implies that in this respect the Lange–Taylor model is superior to the model of socialism with autonomous firms.

While this is the main argument for the Lange–Taylor model, one had better not overstate its importance. From what has been said it follows, in fact, that the debate on the comparative merits of socialism and capitalism centres not so much on the applicability of Paretian and Walrasian schemata (which are usually discussed by reference to a static model), as on the arguments of the Austrian school concerning the dynamic model and the role of incentives.

A further argument for the Lange–Taylor model is that centralized pricing averts the problems inherent in 'false trading', since the use of the auctioneer at the centre implies that equilibrium prices will have to be identified before the very first exchanges are made (see Ward, 1967, pp. 32–3); and this seems to be an advantage over the reality of capitalist markets, where the trend towards equilibrium prices is hampered by the fact that day-to-day exchanges are seldom, if ever, transacted at equilibrium prices.

Let us spell out in bold letters that no clear-cut distinction is possible between the two models of market socialism on the basis of the incentives issue. It would be a mistake to say that they differ from one another because the profit motive is absent from economic action in the Taylor, Lange and Lerner model and is reintroduced into the model of socialism with autonomous firms, where it becomes the very soul of the system, no less than in capitalism. As this was an aspect of the debate which ignited the most violent controversy, it will be worth making the point as clear as possible.

The reader already knows that Lange's 1936–37 article makes no mention of profit as a motive to action and totally ignores the incentives issue. None the less, incentives are the crux of the problem. They have been the focus of the discussion ever since and by general agreement it is the absence of such incentives that is the main obstacle to the implementation of any socialist proposal whatsoever.

Be that as it may, the fact remains that the Lange–Taylor model is usually interpreted as propounding production at minimum cost without providing the incentive of the profit motive.

When the model is interpreted in the usual manner, there is no doubt that it proves difficult to achieve in practice and lays itself open to the criticisms of Hayek and the Austrian school. Having issued his/her orders, the planner must monitor their performance. And if profit is not used to reward managers, these can hardly be expected to perform their tasks spontaneously and dutifully. This is why the planner will need teams of inspectors to call on firms and check whether the managers have actually abided by the Lange and Lerner rule and have really chosen the most efficient production combinations. And this is such a gigantic undertaking that it would be unrealistic to think it could ever be carried out efficiently.[20]

Even supposing that profit is used as a motive to action, however, the Lange–Taylor model raises serious problems and in part remains open to criticism. If prices are fixed by the planner, they can only be fixed for large categories of goods and changed at fairly long intervals of time. As has already been mentioned, the serious problems this involves were highlighted by Hayek in 1940 and by the Austrian school in later contributions.

When weighed against these major drawbacks, the Lange–Taylor model barely seems to offer any advantage over the model with autonomous firms. But can market socialism with autonomous firms really be considered as a model of socialism?

In Lavoie's view:

> The major economic reasons for being of the central planning idea has been the subsuming of production under conscious, unified, non-rivalrous control. If a system of prices is to be reconciled with conscious planning, it would appear that the equilibrating process required to co-ordinate those who calculate with these prices would necessarily have to be carried out, as it were, on paper, or, as some contemporary theorists might say, in the computer. Plant managers would have to submit to a central body that *precoordinates* their plan in advance of all economic activity. If this co-ordination is left to the a posteriori equilibrating process of rivalrous competition instead of to the a priori process of formulating a plan, an essential component of the original central planning program will have to be abandoned. (Lavoie, 1985, p. 86; emphasis in the original)

In other words, Lavoie holds that a system which grants autonomy to its managers is no longer a socialist system. But this contention of Lavoie's is in open conflict with what Lange wrote in his 1936–37 contribution. More generally, it is also in contrast with the ideas socialists were developing during

what Hayek termed the third stage of the debate. As mentioned before, at that time socialists had already admitted the possibility of reintroducing market competition and no one was still assuming that the computation problem could be solved at the desk. Consequently Lavoie is totally wrong when he ascribes to contemporary socialists the idea that the *substitution* of conscious planning for the market is nowadays an essential component of socialism. In the latter half of the 1930s socialists had already ceased proposing a centralized planning system without recourse to the market and neither Lange nor Dickinson was still suggesting that the general economic equilibrium equations could be solved 'at the desk'. Besides, as Lange and Dickinson were prepared to leave the pricing of consumer goods to single firms, one cannot see why socialists could not admit that the pricing of capital goods was also to be left to the market.

At times Hayek's 1935 and 1940 articles are presented as implying, among other things, that socialist managers cannot become true entrepreneurs; and this is why they are also said to have voiced criticisms of market socialism with autonomous firms before this form of socialism was even conceptualized (see Halm, 1968, pp. 208–9 and Moss, 1994, pp. 97–9). But it is very difficult to agree on such an opinion.

Now that the differences between these two prototypes of market socialism have been made clear, it will be worth investigating the reasons why the debate constantly focused on the Lange–Taylor model, and not the model of market socialism with autonomous firms. In his 1940 article, having remarked that during the third stage of the debate socialists suggested adopting free-market competition in their systems, Hayek said he could not account for the fact that Lange and Dickinson 'both refuse to let prices be determined directly in the market', that is, why they kept refusing 'to go the whole hog and to restore the price mechanism in full' (Hayek, 1940, p. 185). But it is also interesting to note that after raising this problem, he decided to 'leave this question aside for the moment' and to 'take it for granted that in such a society competition cannot play quite the same role as it does in a society based on private property' (Hayek, 1940, pp. 185–6).

The point to be explained is why it was only the Lange–Taylor model, and not also the model of market socialism with autonomous firms, that remained the focus of much debate for so many years. In all likelihood the reason is that liberalists assumed autonomous management to be incompatible with socialism, although this explanation is clearly unacceptable. As Lange's 1936–37 model does grant much autonomy to firms, all those (like Lavoie) who insist on the incompatibility of socialism with autonomous management should go one step further and deny altogether that Lange's 1936–37 model has anything to do with socialism.[21] And as Lavoie avoids taking such a radical stance, he remains trapped in a contradiction.

In the 1930s Lange actually suggested leaving socialist firms free to price consumer goods themselves, but left the task of pricing capital goods to the central planning authority. As has previously been pointed out, however, this does not mean that he was still holding on to the idea of substituting planning for the market or that he was still thinking of having capital goods priced 'at the desk'. The same also applies to Dickinson. But what we again want to stress here is that when socialist firms are authorized to fix the prices of consumer goods, there is no reason why they should not be empowered to fix the prices of capital goods as well.

It follows, therefore, that the attention given to the Lange–Taylor model and the scant interest in the socialist model with autonomous firms can only be explained by assuming that the former was classed as being a model of socialism, while the latter was not. And this in turn can only be explained by bearing in mind the peculiar manner in which that debate progressed and the fact that both socialists and critics of market socialism held Lange's 1936–37 model to be the most important contribution on the subject and thus the main, if not exclusive, reference point for any discussion.[22]

4.8 FURTHER OBSERVATIONS ON THE DEBATE IN THE 1930S

Apart from Dobb's contribution, the socialist calculation debate has often been viewed as a protracted investigation into the possibility for a socialist economy to reach a Pareto optimum in line with the first theorem of welfare economics.[23] As is well known, a Pareto optimum is a situation of equilibrium which is achieved in a hypothetical situation of capitalism with perfect competition if certain restrictive conditions concerning the utility and production functions are met.

As far as the theoretical prospects for the working of a socialist system are concerned, the socialists had the last word in that debate. As Bergson said in his well-known 1948 overview: 'by now it seems generally agreed that the argument on these questions advanced by Mises himself, at least according to one interpretation, is without much force' (Bergson, 1948, p. 412).[24] But socialists also had the upper hand because the Lange–Taylor model (unlike capitalism) actually allows a Pareto optimum to be reached. To quote Schumpeter, 'as a matter of blueprint logic it is undeniable that the socialist blueprint is drawn at a higher level of rationality' (Schumpeter, 1942, p. 196) – a stance most economists seem to have agreed with until recently.

As for the theoretical possibility of achieving a Pareto optimum, it is worth mentioning that the debate of the 1930s demonstrated the superiority of market socialism over capitalism for two reasons. The first of these is that anything resembling a *tâtonnement* system is altogether impracticable in the modern capitalist world, where monopolies and oligopolies result in a serious obstacle to perfect competition, while in market socialism the planner can act as a Walrasian auctioneer. This means that he/she can postpone all transactions until after equilibrium is reached and instruct firms to level out marginal cost with the price at which demand equals total supply.[25]

The second argument in support of the superiority of market socialism over capitalism is perhaps even more decisive. As is well known, the first theorem of welfare economics postulates the achievement of a Pareto optimum for each *given* initial distribution of resources; and enemies of capitalism can easily argue that, despite its imbalances and injustice, the present capitalist world has never devised policies capable of bringing about a distribution of income which most people would perceive as being the best possible (see, for example, Sen, 1983, pp. 4–5). It is true that according to a second theorem of welfare economics (under given conditions) any Pareto optimum can be achieved provided the initial distribution of resources is changed. In capitalism, however, resources have constantly been distributed in a highly unequal manner and it is unrealistic to assume that political decisions intended to bring about a socially acceptable income distribution will ever be reached (see Graaf, 1957, pp. 77–82 and Dobb, 1969, pp. 23–6).

From the above perspective, the superiority of socialism over capitalism is inherent in the very fact that only a socialist economic system will ever be able to distribute income in accordance with maximum social welfare criteria (see Lange, 1962a, p. 99).

Although the present state of the debate has changed as a result of a number of criticisms raised against traditional welfare economics, it may be assumed that the above arguments in support of the superiority of socialism over capitalism are likely to be accepted only by those who concur with the basic theorems of standard welfare economics and by those who maintain that the debate of the 1930s ended with what we called the third round, that is, the stage which discussed the Lange–Taylor model. To those (including the authors) who maintain that the third round of that debate was followed by a fourth which discussed the socialist model with autonomous firms, this line of reasoning will appear far from convincing, since the market structure prevailing in the model with autonomous firms can in no way be likened to perfect competition.

Historically speaking, the debate of the 1930s actually came to an end with the third round explained above, but we have argued that the third round was followed by a fourth, in which the terms of the debate were carried to their logical conclusions.

Consequently the above line of reasoning can only be accepted *in full* if the 'debate of the 1930s' is merely taken to include the discussions that actually took place in those years. On the contrary it requires further qualification if the phrase 'debate of the 1930s' is taken to cover the whole socialist calculation debate and if one admits that the third round was followed by a fourth which extends to this day.

As mentioned before, the debate which actually took place in the 1930s cannot be assumed to have exhausted the subject. Organizational issues concerning the firm and society as a whole were largely ignored, the firm was presented as a sort of 'black box' and the assumption that firms would always abide by the instructions received from the planner was never the real focus of the debate. One may think, for instance, of the argument (already discussed in relation to the Lange–Lerner model) that in a situation of full employment discipline in the workplace is found to slacken and workers are seen to neglect their duties (hence the 'shirking' issue); but this is just one aspect of a much broader issue. What matters here is that organizational issues are inextricably linked to the problem of incentives – that is, (according to many) the Achilles' heel of any socialist order (irrespective of its organizational pattern) and the real obstacle to its practical implementation.[26] As these problems have been thoroughly discussed in more recent years, the socialist calculation debate may be said to have remained topical to this day.[27]

4.9 POSSIBLE FORMS OF SOCIALISM WITH AUTONOMOUS FIRMS

The distinction previously made between the Lange–Taylor model and the socialist model with autonomous firms will have to be further clarified, since socialism with autonomous firms falls in turn into two main organizational forms termed 'managerial socialism' and 'labour management'. The former is the model of socialism with autonomous firms that has been discussed so far, that is, the model in which firms use publicly-owned capital goods and are run by centrally-appointed managers earning fixed salaries; the latter is a model with publicly-owned production means where firms are run by those who work in them and workers are granted shares of the profits.

As mentioned above, managerial socialism differs from the Lange–Taylor model because in the former prices are fixed by the central government, whereas in the latter they are fixed by individual firms. But as in the Lange–Taylor model the planner is required to fix prices at the exact level at which demand equals supply, and not at his/her discretion, managerial socialism seems to be a more rational form of social organization than the Lange–Taylor model. As observed above, in fact, there is no reason to leave pricing with the planner without granting him/her some measure of discretionary power in price-fixing.

Having stressed the superiority of socialism with autonomous firms, it is worth spending a few introductory words on labour management (which will be discussed in detail in the following chapters). Right from the outset it is possible to state that this model is to be preferred to managerial socialism provided its functioning is not impeded by specific difficulties. One important difference between these two forms of social organization is indeed that in labour management managers are elected by the workers of the firm, while in managerial socialism they are appointed by the government. Thus the question arises whether there are any grounds for preferring externally-appointed managers to managers democratically elected by the workers themselves. In a socialist system with autonomous firms it is not the government, but those who live and work in the firm that determine its operating results, so that the actual performance of a firm will depend both on the choices of all those who work in it and on their commitment to their jobs. This determines that the option for a model with centrally-appointed managers responsible for the results of the firm's operations is not justifiable on any grounds whatsoever. If the performance of a firm depends on the commitment of all those who work in it, the natural solution seems to be to make everyone responsible for its operating results.

The second important difference between the two types of social organization we are examining here is that in a labour-managed system workers are paid in proportion to the net revenue of the firm, while in managerial socialism they earn fixed wages. Also with reference to this difference it is fairly impossible to argue, in principle, that a system where workers earn fixed wages is to be preferred to the alternative system. It is worth repeating that in socialism with autonomous firms the responsibility for a firm's operations lies entirely with those who live and work in it, so that the firm's performance is determined both by its managers and by its workers. On what grounds should workers be prevented from assuming responsibility for the economic and financial performance of the firm? And why should we rule out an arrangement in which workers are paid in relation to their efficiency in the workplace?

The above observations may provide an introduction to what will be discussed in the next chapters.

NOTES

1. See, among others, Lange (1965, p. 158) and Lavoie (1985, p. 79), although the latter is extremely critical of this way of addressing the debate. Just like Lavoie, Blaug also pointed out that 'Lange pretended that Mises had claimed that socialism was theoretically impossible, so that his task was merely to show that it might be feasible. Actually, this became the standard mythology about Mises' argument but, in fact, Mises' thesis, like that of Hayek and Robbins after him, was that it might be possible in principle, but could

not be made to work practically except at a lower level of output than a market economy would yield' (see Blaug, 1993, p. 1571).

2. Blaug wrote that 'ironically, it was Lange's proposal for market socialism that proved to be impractical', so much so that 'in all the recent calls for reform of Soviet bloc economies, no one has ever suggested that Lange was of any relevance whatsoever' (see Blaug, 1993, p. 1571).
3. As mentioned before, many of the problems categorized as 'practical' in the 1930s became major theoretical issues in the 1970s (see Vaughn, 1980, pp. 551–2 and Moss, 1994, pp. 97–8).
4. In a letter to Hayek dated 31 July 1940 Lange announced his intention to write a reply to Hayek, 1940 and to Lerner's 1936 article (see Lange, 1940, p. 298); but this reply was never written.
5. In his 1940 letter to Hayek, Lange provided the following comment on his 1936–37 article: 'I do not propose price fixing by a real central planning board as a practical solution. It was used, in my paper, only as a methodological device' (Lange, 1940, p. 298). Immediately after, he also set forth his own practical solution: 'practically, he wrote, I should, of course, recommend the determination of the prices by a thorough market process wherever this is feasible, that is, whenever the number of selling and purchasing units is sufficiently large. Only where the number of these units is so small that a situation of oligopoly, oligopsony or bilateral monopoly would obtain, would I advocate price fixing by public agency on the principles laid down in my booklet as a practical solution' (Lange, 1940, p. 298).
6. Lange's hesitation concerning the major themes under review here seems to be confirmed by the fact that he never wrote the article he had preannounced in his letter to Hayek in 1940, by his insistence on the need to conduct further research on the subject (see Lange, 1940, p. 298, 1947, p. 322 and 1957, pp. 332–3), and also by his 1965 article which will be discussed in Section 4 here below. According to Kovalick, as early as 1942 Lange began looking with favour on a sort of mixed economic system or, at least, a form of market socialism with only a partial socialization of production means, that is, on a system lying somewhere between his 1936–37 model and capitalism (see Kowalick, 1994, p. xxi).
7. Regarding this, Lange himself quoted Engels (1886, p. 354), and Marx (1867, p. 92): 'my standpoint ... is one from which the development of the economic formation of society is viewed as a process of natural history'.
8. According to some, however, the relation between market and computer is the other way round: that is, modern computers are to be viewed as (comparatively primitive) central planning tools which ought to be replaced by decentralized markets (proper) (see Lavoie, 1990, p. 76).
9. The 1965 article has been judged as rather unimportant and, in any case, typical of a period in which Lange was not free to express his true convictions (see Yunker, 1992, p. 62).
10. On the evolution of Lange's thought until his death in 1965, see Kowalick (1994).
11. On Lange, the public enterprise and cooperation, see Jossa (1985, 1991a and 1991c).
12. On the difficulties encountered in introducing market socialism into a country previously organized as a planned economy, see, for example, Kornai (1993).
13. As has rightly been observed, 'the immediate outcome of that debate was the production of a theoretical model known as market socialism' (see McCormick, 1992, p. 135). Also see, for example, Stauber (1987, pp. 338 ff.), who dwells on the fact that the debate did not lead to a proposal for socialism with autonomous firms.
14. The stages identified here are basically those of Hayek with the addition of a fourth stage following upon the third.

15. As mentioned before, according to Hayek the central issue of the third stage was the possibility for a socialist economy to function with the introduction of at least some competition and this stage began with the contributions by Lange and Dickinson (see Hayek, 1940, pp. 184–6).
16. According to Bardhan and Roemer the crucial problem with state-owned production means is that decisions are simultaneously based on economic and political criteria and will thus result in serious inefficiencies (see Bardhan and Roemer, 1992, p. 102). In this respect it is worth noting that the rationale behind the model of market socialism with autonomous firms is precisely the separation of political choices from economic choices.
17. As far as the timing of the socialist calculation debate is concerned, we depart from Hayek in identifying four, not three, stages. As for Lavoie, a staunch follower of Hayek, he is inclined to overemphasize the part played in the debate by both Hayek and other authors of the Austrian school and consequently insists that it was these that had the last word on the subject (see Lavoie, 1985, Chapters 4–6). Bardham and Roemer have recently divided the development of the theory of market socialism into five successive stages, the last two of which fall within the period following Hayek's 1940 contribution (see Bardham and Roemer, 1993; and Roemer, 1994, Chapter 4).
18. On the numerous possible forms of market socialism, see Bardhan and Roemer (1993a); Bardhan and Roemer (1993b, pp. 9–11); and Roemer, 1994, Chapter 6.
19. A different distinction between two basic forms of market socialism is proposed in Weisskopf (1993, pp. 120–23).
20. Buchanan's contention (1985, conclusions) that the theory of market socialism will remain incomplete until an appropriate approach to the problem of incentives to bureaucrats, managers and workers is worked out can be rightly applied to this form of market socialism.
21. For an interesting comment on Dickinson's contribution on this point the reader is referred to Lavoie (1985, pp. 137–8).
22. Interesting comments on this point are found in Nuti (1992, pp. 17–20).
23. The first theorem of welfare economics was originally propounded for perfect competition capitalism by Pigou (1928) and Bergson (1938), but rigorously demonstrated as late as 1951 (Arrow) and 1959 (Debreu).
24. Bergson's observation was generally shared by economists even as late as the 1950s and 1960s. A reversal of trend in mainstream theory has only been recorded from the 1980s onwards (see, among others, Blaug, 1993, pp. 1570–71).
25. This crucial idea is expressed in the contributions of all the socialist participants in the debate of the 1930s (see Vaughn, 1980, p. 356), but received special attention in an early book by Hall (1937) which nowadays is hardly ever mentioned. More recently, it is reproposed in Cave and Nare (1981, p. 101); and Lavoie (1985, p. 85).
26. The problem of incentives was ignored in the 1930s because it was categorized as a sociological rather than economic problem (see, for example, Durbin, 1936, p. 687 and Lerner, 1937, p. 267).
27. More than ten years ago Vaughn remarked that the subjects discussed in the 1930s were still among the thorniest points of contemporary economic theory and were still awaiting a satisfactory solution forty years after the end of that debate (Vaughn, 1980, p. 535). This comment appears to be just as valid today.

5. On the taxonomy of economic systems

What is most surprising about the way professional economists handle these problems is how little they think about them. (Hayek)

5.1 INTRODUCTION

As has been mentioned before, the scant attention so far given to the form of socialism with autonomous firms can probably be explained by the widespread assumption that this kind of social organization does not substantially differ from capitalism despite the social ownership of production means. In the following pages our efforts will thus be directed at providing sufficient evidence that a socialist system with autonomous firms is an authentic form of socialism and, as such, deserves due consideration. Despite much debate in past years, now that the Soviet system has collapsed the Lange–Taylor model will barely rouse any interest because the criticisms that Hayek and the Austrian school dealt out to its markedly statist character will appear all the more convincing today. Further on we will also show that, besides defying the criticisms of the Austrian school, socialism with autonomous firms seems to offer significant advantages over capitalism.

Once we have shown that socialism with autonomous firms is the best form of socialism, we shall focus on a further distinction between two different forms of socialism: the system termed 'managerial socialism' and the one usually termed 'labour management'; and the perspective from which we intend to conduct our analysis will lead us to conclude that, of the two forms mentioned here, labour management is to be preferred because of its decidedly more democratic nature (and also for several other reasons mentioned further on).

This chapter is an introduction to the detailed analysis of the model with labour management which will follow in the next chapters.

5.2 SOME DEFINITIONS OF SOCIALISM

To clarify the terms of the issues to be discussed in this chapter, let us first of all point out that when reviewing the debate on the comparative merits of

capitalism and socialism we come across at least two different definitions of socialism.[1] In its traditional definition, socialism is a system in which production means are socially owned. This is a clear and simple definition which apparently creates no problems of interpretation. Dobb wrote:

> a treatment of the essence of a socialist economy as being other than the social ownership of means of production would represent a definite breach with the tradition of socialist thought as this was inherited from the past century and as it has inspired attempts to construct a socialist society characteristic of the present century. Emphasis on social ownership, indeed, was not only characteristic of nineteenth-century founding-fathers of socialism as a doctrine and as a social movement, in particular Marx and Engels, but it has been the most commonly accepted emphasis of subsequent historians of the creed. (Dobb (1969, pp. 123–4)

According to many authors, however, the fact that production means are publicly owned is not enough, in itself, to properly define a social organization as being socialist. The numerous imperfections of free-market economies on the one hand and the experience of communist regimes on the other have led many people to assume that centrally-planned production is another prerequisite of a socialist society.[2] According to this second conceptualization of socialism, planning is indeed its essential characteristic and the social ownership of capital goods is simply viewed as the legal framework within which economic planning is made possible.

Planning, however, can be achieved either by 'administrative means', that is, by substituting the planner's decisions for the mechanisms of the market, or, indirectly, by using the levers of economic policy to impress a given direction upon the market; and this, as will be shown, introduces a further element of complication into the picture.

The above definitions of socialism are both widely accepted and it is far from easy to tell which of them prevails over the other; also, opinions on the subject have been found to change over the years. Those who associate socialism with the Soviet system are undoubtedly inclined to prioritize the second definition which centres on the role of planning; on the contrary, those who hold socialism to be a system radically different from the Soviet model tend to identify socialism with the social ownership of means of production.

Although the idea that the nationalization of production means is the prerequisite of any socialist system seems to be unchallenged, there are still some who argue that publicly-owned production means rule out the very existence of a market for capital goods. According to Levine, for instance, an integral form of *market* socialism in which even capital goods are freely purchased and sold in a market would tend to evolve into a capitalist system.[3] As will be shown in greater detail further on, this stance is clearly misleading in purely logical terms, because the mere state ownership of the capital goods available to firms cannot, in itself, rule out the existence of a market for capital goods where socialist managers would purchase the capital goods they need for the firms they run.[4]

Nevertheless it is still eagerly debated whether a system with publicly-owned capital goods in which the market mechanism is not replaced by administrative methods can properly be termed a socialist society. In his 1935 article on socialist economic calculation Hayek maintained that for a social organization to be defined as socialist a 'minimum assumption consistent with the idea of collective ownership' must be maintained. This minimum assumption he identified with placing control over a given quantity of community-owned resources (the quantity of resources to be allotted to the managers of single firms) in the hands of a central authority, since in the absence of such control over production means planning would cease to be a problem and become inconceivable (see Hayek, 1935b, pp. 19–20). In the same essay Hayek also defined planning as 'the actual direction of productive activity by authoritative prescription, either of the quantities to be produced, the methods of production to be used, or the prices to be fixed'.[5]

In Hayek's view, therefore, the essence of socialism is not the public ownership of production means, but the substitution of the planner's instructions for the market. As shown before, this definition of Hayek's was much discussed during the debate on the economics of socialism in the 1930s.[6] Even before Hayek, discussing the problem of the most appropriate definition of a 'socialist state', Taylor wrote:

> A state so designated is here understood as being one in which the control of the whole apparatus of production and the guidance of all productive operations is to be in the hands of the state itself. In other words, the state is to be the sole responsible producer, that is, the sole person, natural or legal, who is authorized to employ the economic resources of the community, its stock or income of primary factors, in producing commodities. As such sole producer, the state maintains exchange relations with its citizens, buying their productive services with money and selling to them the commodities which it produces.[7]

As mentioned above, Hayek's 'direction of productive activity' is the kind of direct control which is exercised by substituting the planner's instructions for the mechanisms of the market. This conclusion is even more clearly confirmed by the subsequent evolution of Hayek's thought, when he investigated the subjects discussed in the 1930s from a different perspective.[8] As is well known, one central idea in Hayek's thought is the distinction between two orders, one created by forces outside the system (that is, 'exogenous' forces) and one spontaneously generated by forces inside the system (or 'endogenous' forces). The former system, which can also be termed an organization, is an artificial order, an order brought about by conscious

human action; the latter is gradually and unconsciously brought about by the interaction of numerous elements. According to Hayek, the differences between socialism and capitalism are to be viewed in the light of this distinction because socialism is a form of social organization not founded on the market, a system based on commands from the planner and characterized by the substitution of the conscious choices of those directing economic activity for the spontaneous operation of the market.

This leads us to suggest a third definition of socialism as an economic not founded on the market, but directed by the commands of a planner. However, as those who identify socialism with the social control of production means are unlikely to deny that this social control involves publicly-owned means, on closer examination this is the definition propounded by all those who argue that the prerequisites of a socialist order are both the social control and the public ownership of production means and the bureaucratic-authoritarian nature of such control.[9]

Hayek's idea that the social ownership of production means has as its prerequisite the planner's direct control of capital goods probably stems from a particularly wide concept of property he took from Mises. According to the latter, in fact, 'the sociological and juristic concepts of ownership are different', because from an economic and sociological point of view 'an owner is he who disposes of an economic good', that is, he/she who is free to dispose of it even though he/she is not its legal owner (see Mises, 1932 and 1951, p. 27); in Mises' opinion, therefore, ownership and control are inseparable from each other and from the perspective of an economist the right to use a good is equivalent to an ownership title (see Mises, 1932 and 1951, p. 28). In more recent years the idea that ownership and control coincide because a firm is nothing but the capital goods it owns and because the right to control a firm's assets and economic activity is inherent in the ownership title to its capital goods is the core assumption in Grossman's, Hart's and Moore's conceptualizations of the firm (see above all Grossman and Hart, 1986, and Hart and Moore, 1990).[10]

5.3 THE ALLOCATION OF RESOURCES IN SOCIALISM

But Hayek's definition of socialism must be definitely rejected. Planning is not necessarily equal with directing specific commands to specific firms, nor does it necessarily result in substituting bureaucratic decisions for private profit calculations or administrative methods for the market. When planning is regulated by law and founded on the levers of economic policy, it may attain whatever objectives it chooses to attain and may prove more effective than administrative planning. Why should one say, therefore, that socialism requires a planning mode which substitutes the planner's commands for the choices made in the market?

More and more often today there is growing agreement among theorists that a socialist economy will not abolish economic laws, but rather make full use of them and even let them operate more freely. This is a concept which was already pointed out in our previous analysis of Lange's thought on the subject. And this is what makes us class Hayek's definition of socialism as out-dated, that is, specifically referring to the time when socialists wanted to do away with the market altogether, instead of simply keeping it in check.[11] And it is a fact that the more discerning in the socialist camp ceased proposing to replace the market with bureaucratic resource allocation exactly at the time of the socialist calculation debate from which Hayek set out for his theoretical reflections on socialism.

Hayek's definition is clearly aimed to discredit socialism; for, if (despite its many imperfections) the market is a computing device, to deny that the planner must adopt the logic of the market in making his/her choices is tantamount to saying that his/her decisions must result in a waste of resources.

In a system with indirect planning the government's choices are obviously governed by public interest, but the choices of households and firms are free and continue to be guided by the private utility and profit motive. In a system with indirect planning it is correct to say that production is consciously directed by the planner although society remains organized along competitive lines. As has already been mentioned, according to Lavoie the economic rationale underlying centralized planning was mainly to exercise 'conscious, unified, non-rivalrous control' over production; but while this may faithfully describe the actual experience of Soviet communism, in theory one may well say that the major economic rationale behind centralized planning is to exercise conscious and unified control over production, though not in such a way that this would require abolishing the competitive, rivalrous nature of economic activity.[12]

Analysing Dickinson's contribution, Lavoie wonders why Dickinson wanted socialist managers to be free and autonomous and to take on responsibility for the economic consequences of their choices. Thus he argues:

> If managers must be free to exercise initiative, bearing the burdens and reaping the benefits of their own risk judgements, then what is left of the professed goal of planning, which was to create a deliberate, conscious control of economic life? It seems that Dickinson has deflected this argument by conceding the need for the very feature of capitalism he had set out to prove unnecessary: independent, private decision making. (Lavoie, 1985, p. 138)

But the errors in Lavoie's line of reasoning are apparent. First of all he fails to realize that central planning may be indirect and may thus not require the abolition of competition; second, he mistakes conscious control over economic activity for the replacement of the market with bureaucratic decision-making and fails to see that conscious control over economic activity does not necessarily involve preventing families and firms from making independent private choices.

In the passage quoted below (unlike the previous one) Lavoie seems to assume a correct stance, that is, he appears to be suggesting that the only prerequisite for a system to be defined as socialist is the public ownership of production means.

> Clearly, wherever responsibility for decisions is delegated to managers in the lower levels of hierarchy of an organization there must be some procedure for monitoring their performance. If plant managers were given free rein there would be no validity to the claim that ownership of the means of the production is common, but if their every move were determined by central decree we would be back to a non-competitive, centralized model. If the competitive solution is to be judged according to its own advocates' aims, it will have to lie somewhere between these extremes. Plant managers must be given authority to decide the details of production, but ultimate responsibility for the performance of managers must be retained by the central office. (see Lavoie, 1985, p. 165)

This observation sounds convincing because it emphasizes that all that is needed for a system to be defined as socialist is to leave the 'ultimate responsibility' for the management of firms with the central government. But this is precisely what happens when the state is the owner of production means and, as such, reserves the right to express a value judgement of some sort on the operating results of firms (for instance through the system of promotion).[13]

All of this obviously implies that we cannot identify a capitalist system with a market economy – as Sweezy, Amin, Levine and many other authors of the Marxist and non-Marxist fronts often do;[14] and it also rules out the very possibility of maintaining, as Max Weber did, that the essence of capitalism lies in its ability to make rational calculations (see Weber, 1904–05).

5.4 SOCIALISM AND THE PUBLIC OWNERSHIP OF PRODUCTION MEANS

What has been said so far prompts the conclusion that the only one acceptable definition of socialism is its equation with the public or social ownership of production means. While there is no denying that classical socialist theory aimed to abolish the market altogether, this objective has had no place in the relevant theoretical analyses for at least sixty years, that is, since the debate of the 1930s. This debate threw sufficient light on the fact that a socialist system intending to allocate resources in the best possible manner cannot substitute administrative methods for the market; and the collapse of the Soviet system certainly did much to silence any political dissension on the subject. The acknowledgement that a socialist system must not do away with the market, however, not only makes Hayek's definition of socialism (our third definition) decidedly out-dated and devoid of any interest, but also makes it clear that the only acceptable definition of socialism is the one which equates it with the public (or social) ownership of production means.[15]

As soon as the idea that socialism must necessarily do away with the market is discarded, the great conflict between the opposed political views competing with each other in the political arena is – as Hayek clarified better than any other – the spontaneity-versus-control opposition. Here we are thinking of Hayek's theoretical activity after the debate of the 1930s, when the alternatives discussed were economic liberalism or government intervention in politics – with supporters of the spontaneous operation of the market on the one front and advocates of public control over the economy on the other. But the spontaneity-versus-control opposition is inherent in capitalism itself and those who identify economic intervention with socialism do not help to throw light on the debate.

In other words, once the idea that socialism must necessarily do away with the market is disproved, the great political conflict that gains momentum is the opposition between liberalists, who are in favour of spontaneity, and Keynesians, who insist on the need of government intervention to keep the economic system in check. Both liberalists and Keynesians, however, are advocates of capitalism and it would not help the debate in the slightest to identify Keynesians with socialists. And this brings us back yet again to the problem of how to properly define socialism.

If planning is not conceived of as a new method for allocating resources without the market, then it is nothing other than having public control over the economy. As mentioned above, planning may be direct or indirect. Direct planning can be adopted in place of the market; but if, as indeed it should, it has recourse to rational calculations, then planning *must not* be substituted for the market. Hence, if exercising public control over the economy does not involve, in itself, the abandonment of capitalism, then it is not admissible to equate socialism with a planned economy.[16]

It goes without saying that the social ownership of production means should enable the state to exercise greater control over the economy. But if socialism, as mentioned before, cannot be identified with such social control over the economy, the only acceptable definition of socialism is to equate it with an economic and social order aiming to achieve greater control over economic activity by nationalizing production means.

One obvious consequence of this is that market socialism with autonomous firms will have to be considered an authentic form of socialism, indeed the only form of socialism still worth analysing today.

At this point let us re-examine the case of Hayek. According to Dasgupta, the only alternative to capitalism that Hayek actually considered in all his writings was command economy, that is, a form of social organization in which everything is government directed (see Dasgupta, 1982). Focusing mainly on the article entitled 'Socialist Calculation III: The Competitive "Solution"', where he concerned himself with the subject of market socialism more than in any other (see Hayek, 1940), one might object that the article ends where it ought to have begun, for it continually and exclusively analyses the case of socialism with centrally-fixed prices without even a hint at the principles of genuine market socialism.[17] This can probably be explained by the fact that the article was written in 1940 and that the works Hayek was criticizing in it still propounded a form of socialism with prices fixed at the centre. None the less the fact remains that even in later years Hayek never discussed any form of socialism with autonomous firms.[18]

5.5 FIRM OWNERSHIP DOES NOT EXIST

Some interesting essays by Ellerman have cast doubt on the notion that public ownership of production means is the distinctive feature of socialism (Ellerman, 1982, 1990 and 1992a).

Ellerman's contribution sets out from a simple but (at least for traditional economists) surprising contention intended to refute 'the fundamental myth of capitalist property rights'. As a matter of fact, he states, there is no such thing as firm ownership. 'There is no such property right as the ownership of the firm' (Ellerman, 1992a, p. 12; also see Ellerman, 1992b, p. 158). The firm is 'a contractual role', not a property right, a 'piece of property' (Ellerman, 1992a, p. 12).[19] A firm comes into being when an individual decides to purchase the services provided by the factors required to produce one or more goods, that is, when a person rents, leases or otherwise takes over one or more production factors with a view to using them to conduct any business activity. As is well known, the entrepreneur is the person who organizes production activity irrespective of whether he/she is, or is not, the actual owner of the production factors he/she uses,[20] but the point on which orthodox economic theory has failed to focus is that this does not depend on the separation of the ownership of a firm from its control, but on the very inexistence of what is termed the ownership of the firm. What does exist is the ownership title to the factors of production, the status of principal of a firm, but not the ownership of the firm as such.[21]

The status of principal of a firm is the status vested in the person who hires the production factors and bears the relevant cost. It entitles the person concerned to receive the surplus earned by the firm, that is, its net operating result, the difference between the value of the products and production costs; but the status of principal of a firm is in no way connected with the ownership title to the firm's production factors or any other ownership title whatsoever. Any individual setting up a firm may borrow not only the monetary capital he/she needs, but even single capital goods or the bulk of them. The name 'firm' designates the capitalist firm in which the owner of the production means hires the workforce, the (equally capitalist) firm which does not own any property and conducts business by renting third-party capital goods and hiring workers and the cooperative firm in which a number of workers, who may or may not be the owners of a stock of capital goods, borrow loan capital from third parties.[22]

According to Ellerman, the struggle to attain the status of principal of a firm and/or appropriate its surplus is basically a conflict between capital and labour. 'If Capital (= capital-owners) hires Labor (= the workers, including the managers), then Capital is the firm. If Labor hires capital, then Labor is the firm. A contract reversal between Capital and Labor reverses who is the firm' (Ellerman, 1992a, p. 13). 'The winner of the hiring conflict is the hiring party, the party which becomes the firm' (ibid.). 'The inputs are symmetrical between themselves in the capitalist marketplace, and that symmetry precludes a right-to-the-product being preassigned to one particular input' (Ellerman, 1992a, p. 24); the title to the output that can be appropriated and the consequential title to the relevant surplus are both vested in the one who becomes *the hiring party* in the contract of employment; and within this struggle between the two parties it is the party that has the greater bargaining power that becomes the hiring party.[23] It follows, therefore, that the question of the owner of the production means is indeed a vitally important question because it confers substantial bargaining power on the person owning them.

The appropriation issue has received no attention in mainstream theory just because economists have failed to realize that a firm is not a property right, but a contractual role. 'Conventional economics', Ellerman adds, 'does not even recognize that appropriation takes place in production' (Ellerman, 1992a, p. 25). The traditional argument here is that the ownership title to a thing, be it a firm or its production means, entitles the owner to appropriate its fruits. As the owner of a tree is the owner of its fruits – it is usually contended – so the owner of a firm's capital goods is the owner of the firm's output. But the principal of a firm may merely be entitled to make use of the firm's capital goods, and the right to use a good must be distinguished from the right to appropriate the products of its use. Thus the 'uncritical acceptance of the "right-to-the-fruits" concept leads to a neglect of the whole topic of property appropriation in economic theory' (Ellerman, 1992a, p. 25). 'The question of property appropriation in production', so Ellerman continues, 'has simply not been addressed in economic theory' (see Ellerman, 1992a, p. 26).[24]

5.6 CRITICISMS OF ELLERMAN'S CONTRIBUTION

In the light of Ellerman's arguments it is not possible to contend that capitalism differs from socialism because firms are privately owned in the former and publicly owned in the latter. 'The capitalism–socialism debate', he wrote, 'was ill-posed from the beginning' (Ellerman, 1992a, p. 241), as was the recent public/private employment debate. The basic distinction between these opposite systems is between 'a system in which production is organized on the basis of the employment relationship – either public or private, on the one hand, and a system with universal self-employment, on the other', that is, a system in which no one man can be employed by another. But where does the novelty of Ellerman's line of reasoning lie? The idea that workers can establish a cooperative firm without owning any property, only by borrowing third-party capital, has long been well known and has been thoroughly studied over these past thirty years. Similarly, the idea that a person owning no property can borrow capital and employ workers and consequently become an entrepreneur is nothing new. And even the notion that the firm is a contractual role, not a property right, had already been raised in neo-institutionalist literature in these past years. Alchian, for instance, defines the firm as a complex of contractually linked resources which are the property of several owners collaborating between them (see Alchian, 1987, p. 1032). And elsewhere Alchian and Demsetz, in an attempt to clarify 'the essence of the organization we call a firm', wrote: 'Wherein then is the relationship between a grocer and his employee different from that between a grocer and his customers? It is in a *team* use of inputs and a centralized position of some party in the contractual arrangements of *all* other inputs. It is the *centralized contractual agent in a team productive process* – not some superior authoritarian directive or disciplinary power' (emphasis in the original).[25]

However, it stands to Ellerman's credit that he emphasized and threw further light on ideas and issues that had been either insufficiently addressed or inadequately solved in economic theory.[26] The idea that a firm is established by entering into contracts which do not result in any ownership title to the firm and that no such thing as the ownership of a firm actually exists is indeed worth stating clearly.[27] And equal stress should be laid on the contention that the neglect of the appropriation issue in economic theory is due to the obvious assumption that what is produced, that is, the product subject to appropriation, belongs to the firm and thus to its owner. Moreover, once the appropriation issue is viewed from the right perspective, it will also become possible to throw light on the issue of exploitation.

It would not be fair to say that Ellerman's criticisms of economic theory are purely verbal or superficial because they merely focus on terminological correctness. If this were so, Ellerman's contentions would barely touch the capitalism-versus-socialism debate. Instead of maintaining that capitalism is a system of privately-owned firms and that socialism is a system of publicly-owned firms, one would have to clearly specify that capitalism and socialism differ from each other because *production means* are privately owned in the former and publicly owned in the latter.

The fact that we are not dealing with a purely terminological distinction will be clearly perceived considering that we cannot speak of capitalism proper when all capital goods are privately owned while all firms are cooperatives in the style of Vanek's labour-managed firms (LMFs) (in which workers borrow the capital they need, so that there are no owners of production means to hire workers) (see Vanek, 1971a, 1971b and 1975b, pp. 15–16). As Hayek and Lavoie clarified, it is not correct to speak of socialism when the state, while being the owner of all capital goods, merely lends capital to firms and then leaves their management entirely to private initiative without subjecting it to public control.[28]

Although Ellerman's arguments are formally correct, however, they do not substantially alter the real terms of the problem. In actual fact capital goods are seldom rented out to firms by private individuals. Even today, when *lease-purchase transactions* are becoming more and more the rule, firms seldom purchase all their production equipment by leasing. And this is not merely a question of historical record or current trends, but a fundamental aspect which distinguishes 'capital' from 'land' considered as a factor of production. While monetary capital can easily be loaned against interest, the same cannot be said of physical assets which, if rented out, may not yield benefits for both parties. This is due to the fact that by their very nature capital goods (i) are highly heterogeneous, (ii) involve substantial installation expenses, (iii) are subject to continuous wear and (iv) continually require proper maintenance. Very seldom will a private individual thus find it convenient to purchase capital goods with intent only to rent them out to third parties (also because money capital can much more easily be loaned).[29] And there is no need, here, to dwell on the nature and evolution of capital lending and the past record of lending against interest – which stems precisely from the fact that it is usually not convenient to rent out capital goods.

Therefore, as physical assets are neither produced nor purchased in order to be rented out to third parties, it makes little sense to extol an economic system in which private individuals rent capital goods from each other. This is not the case if the capital goods concerned are the property of the state and

can be bailed to groups of workers in the general interest, that is, to prevent capital from exercising control over labour in the sense explained by Marx. But such capital goods as are bailed by the state to groups of workers or even single managers are in fact publicly-owned capital goods granted for use to private individuals. And this brings us back to the traditional distinction between capitalism and socialism which Ellerman set out to refute.

In the light of what has been said above, in fact, the main economic systems that are still competing between themselves in current theory – the only alternatives still to be considered – are (a) capitalism, characterized by the private ownership of production means, (b) a system with publicly-owned production means in which firms are run by managers, and (c) labour management. As was clarified by Vanek in a number of excellent articles (see Vanek, 1971a and 1971b and our own observations in Chapter 11 below) and confirmed by Ellerman, labour management, by its very nature, requires that Labour assumes, or borrows, Capital, that is, that capital is not the property of workers. And this is only possible if capital is publicly owned (see Jossa, 1986 and Cole, 1920, pp. 58 ff.). If, conversely, the alternatives are to be reduced to *two*, the best way to set the two systems against each other is to say that the two alternatives eligible for consideration are capitalism with privately-owned production means and a system without private production means in which firms are run either by managers or by groups of workers, that is, market socialism.[30]

The fourth system analysed by Ellerman is barely worth considering: it is the one in which one or more individuals who own no capital set up a firm by hiring workers and borrowing the required capital from private individuals. In such a case, the founders of the firm are indeed entitled to appropriate both the firm's output and the assets they have purchased; and, as soon as the firm is fitted out with the required production equipment, they become the owners of the firm's capital goods although they merely borrowed their capital. Consequently this is a capitalist system proper.

From what has been said above we may infer that the distinctive feature of a cooperative firm is not so much the Labour-hiring–Capital relation as the fact that capital goods which are *the property of third parties* (as a rule, *the property of the state*) are run by workers. And the reason behind this, let us repeat, is that when workers who have set up a firm through their joint efforts have the right to become the owners of the firm's capital goods, they become worker-capitalists; and as soon as those running the firm become worker-capitalists, the system becomes a mixed one with elements of capitalism (private capital-owners hiring workers) and elements of labour management (workers using or borrowing public capital).

5.7 CAPITALISM AND ITS OPPOSITE

The problem discussed in the previous section must also be considered from a different perspective, that is, setting out from an apparent error in Ellerman's essay. According to Ellerman whoever actively promotes the establishment of a firm and becomes the principal thereof will have to both bear the relevant production costs and acquire the right to appropriate its whole output and any surplus earned. The contractual role of the party that bears the costs of production and thus has the claim on any appropriable products, he writes, 'is called the role of the *hiring party* (because it hires the other factors) or the *residual claimant* (since it nets the value of appropriable products minus the cost of the inputs)' (Ellerman, 1992a, p. 13; emphasis in the original). 'Being the hiring party and thus the whole product appropriator', he adds, 'is a contractual role. It is not the ownership of some specific asset, factor or the performing of any specific service. The whole product is thus not the return to some asset, factor or service. It is a return to the contractual role of being the hiring party' (Ellerman, 1992a, p. 33).

But what about the situation when workers are granted a share of the profits? In that case, obviously, the hiring party, though still the only person responsible for bearing the relevant costs, is no longer exclusively entitled to appropriate the relevant output. It follows, therefore, that it is not justified to contend, as Ellerman does, that the whole output belongs to the party that hires the remaining factors (and which, he says, uses *its own* output to pay its workers). In that case the surplus earned belongs in part to the hiring party and in part to the workers; and it is not correct to say that the whole output and the whole surplus belong to the hiring party, who gives part of the output to his/her workers.

However, as there is no doubt that a firm with privately-owned production means which distributes shares of its profits to workers is a capitalist enterprise, what implications does this have for the theory of economic systems?

Let us again point out that there are three main economic systems: capitalism, the system with publicly-owned firms run by managers and labour management. If, however, we wanted to set *only two* systems against each other, namely capitalism and its opposite, what definition are we to give of capitalism and how are we to group the three systems?

There are obviously two possibilities. According to Ellerman, capitalism is characterized by hired labour, so that its opposite is labour management, a system in which all workers are self-employed, regardless of whether the capital is publicly or privately owned: 'By capitalism we mean production organized on the basis of the employer–employee relationship' (Ellerman, 1992, p. 1). It follows, therefore, that its opposite is to be described as a system without the employment relationship, that is, a system with '*universal self-employment*' (Ellerman, 1992, p. 106; emphasis in the original). If this definition is accepted, the system with publicly-owned production means and centralized planning is a form of capitalism.[31]

This classification contradicts a long tradition of thought; and it is also for this reason that it can barely be assumed to be the most acceptable one.[32] The other possibility is to adhere to the classical distinction between firms with privately-owned production means and firms with publicly-owned production means. In this case one will have capitalism on the one hand and two or more forms of socialism on the other: and provided the Soviet socialist model is not viewed as an 'ideal type' (see, for instance, Jossa, 1990a), these forms of socialism are reduced to no more than three (and, of course, several possible combinations of these ideal types): (i) the Lange–Taylor model, (ii) socialism with autonomous firms run by managers, and (iii) socialism with labour-managed firms.[33]

5.8 MANAGERIAL SOCIALISM OR LABOUR MANAGEMENT?

In order to assess the comparative merits of the different forms of socialism, the following two main aspects are to be kept in mind: (a) those who make the decisions; and (b) those who appropriate the surplus earned.

There is some disagreement on the second point because the theory of the cooperative firm has emphasized that the workers' right to appropriate the surplus earned, though defensible on strong grounds, may result in serious trouble for firms (see further on). On the subject of definitions, however, let us add here that the system is basically characterized by the first point. What really matters is precisely who holds the decision-making power (that is, who wields power in the firm), not the way workers are paid (that is, whether they receive fixed or variable wages and salaries).[34]

As for the labour-managed firm, there is no doubt that its main characteristic is that power is vested in the workers. But if this holds true, then labour management is incontestably superior to managerial socialism.[35] Just as political democracy asserted itself at a certain point in history by vesting supreme power in the people and granting every man or woman the vote (and this was deemed to be a major achievement for mankind), so a fuller achievement of democracy must necessarily involve vesting supreme corporate power in workers.[36] A transition from managerial socialism to labour management, if attained, would thus mark a greater achievement for democracy.[37]

An additional argument in support of what has been said above is that the main weakness of the Lange–Taylor model of socialism and of managerial socialism concerns the issue of who is in charge of appointing, promoting and dismissing managers. In these types of socialism managers may well be granted full decision-making power within the firm, but it will then be necessary to clarify how the state, in its capacity as the owner of such production means, will exercise its right to appoint, promote and dismiss managers. And the problem is certainly far from easy to solve, since there are grounds for fearing that the class of state officers may exercise their rights on a patron–client basis or that those in charge of appointing managers may use their power to breach the rules of democracy – not to mention of the risk that the social control over managers may give rise to a 'soft budget constraint' problem (see Kornai, 1979, 1980a and 1993; Berliner, 1993; Dewatripont and Maskin, 1993; Putterman, 1993a; and Roland and Sekkat, 1993).[38]

Regardless of the method used to appoint them – public competitive examinations or elections by workers' meetings – the managers may be given all the powers required to run their firms, including authority to dismiss workers.[39] But this is a problem which would have to be dealt with in greater detail.[40]

In other words, if the Lange–Taylor model, managerial socialism and labour management – the three authentic forms of market socialism – are all characterized by the social ownership of production means, it is impossible to argue that a system where managers are appointed by the state is to be preferred to a system in which all firm managers are elected by the workers of the firms themselves. If the forms of socialism we are analysing here are all market systems and if the distinctive feature of a market economy is (obviously) that those who produce more also earn more, what good will it do to impose managers upon workers from the outside instead of allowing workers to elect their managers themselves? In market systems those in charge of production must take on responsibility for their actions and the system most conducive to self-responsibility is one where every decision concerning production, including the appointment of managers, rests with workers.

Another major argument for labour management which is not going to be analysed any further although it is linked to the one suggested above is that labour management is not only a true form of market economy, but also an economic system which, stemming from a critical assessment of the shortcomings of statism, may be assumed to be devoid of any statist traces.

5.9 CONCLUSION

The conclusion prompted by the foregoing is that the most rational alternatives to be set against each other today are capitalism (a system characterized by privately-owned production means) and labour-managed socialism (a system with publicly-owned production means and firms managed by workers).

Labour-managed socialism is a true market system even though production means are socially owned; like all market systems, it may require a certain extent of public control over economic activity, that is, planning. But as the substitution of bureaucratic directions for the market would lead to irrational choices, planning will have to be based on economic laws if it is to consciously regulate economic activity.[41]

Ultimately this will lead to identifying not three, but *only one* really acceptable form of socialism: a form of social organization in which production means are publicly owned and where the economy is subjected to conscious control and thus to the dominion of People over Things. If the dominion of Labour over Capital is to be complete, then it must be vested in firms – by granting workers the power to manage them at their discretion – and in society as a whole – by entitling the state to control production activity by statute and by recourse to current instruments of economic policy.

Concluding our analysis of the above general issues, Hayek's contention that socialism is based, not on a different set of values, but on an intellectual error and that it must consequently be criticized from an epistemological – not an ideological – perspective may only be explained in the light of his own definition of socialism (see Cubeddu, 1992, pp. 309–13; and Cubeddu and Vannucci, 1993, pp. 85–9); but although this definition fits perfectly (as mentioned before) into the age when socialists intended to abolish the market, it would reflect neither Marx and Engels's concept of socialism nor the one deemed acceptable by most historians of political thought.

NOTES

1. Some have gone so far as to maintain that behind the present-day crisis of the socialist idea we may sense an intellectual vacuum which can only be filled by radically redefining the meaning of socialism (see Miller, 1990, p. 1).
2. Mises wrote on this point: 'All the means of production are in the exclusive control of the organized society. This and this alone is socialism. All other definitions are misleading' (Mises, 1932 and 1951, p. 211). Also in Schumpeter's definition, a socialist society is one 'in which the control over means of production and over production itself is vested with a central authority – or, as we may say, in which, as a matter of principle, the economic affairs of society belong to the public and not to the private sphere' (see Schumpeter, 1942, p. 167).
3. See Levine (1988, pp. 120–21). On the subject, Sweezy maintained that a system where firms are managed by small groups setting out to maximize profits by producing goods for the market reproduces the production and class relations typical of a capitalist system (see Sweezy, 1968, p. 3).
4. If capital goods are the property of the state, then what firms actually buy is the right to use them. In the form of market socialism that will be discussed in detail below, the state is the real owner of the capital goods used by firms, but the managers of these firms are free to purchase and sell whatever capital goods they like (and these, once purchased,

become the property of the state). Among those who still believe that public ownership and market are incompatible is the well-known Italian historian of socialism D. Settembrini, who contends that 'as it is impossible to abolish private property without abolishng the market, the reverse, i.e. the restoration of the market without the re-establishment of private property, is impossible for the same reason' (see Settembrini, 1996, p. 121).

5. See Hayek (1935b, p. 21). The same definition of socialism is also found in an earlier essay of Hayek's (1933, pp. 121 ff.).
6. Streissler's opinion that the new definition of socialism (by Mises and Hayek) emerged during the socialist calculation debate of the 1930s (see Streissler, 1994, pp. 49–50) has also been mentioned before.
7. See Taylor (1929, p. 43), and among others, also Hoff (1938, Chapter II), and Dickinson (1939, pp. 10–11).
8. Caldwell (1988, p. 535) has pointed out that from 1940 onwards Hayek merely elaborated on arguments which he had first set forth to demonstrate the irrationality of central planning.
9. In addition to the three that have just been outlined, there are obviously other definitions of socialism that will not be examined here. Some of them are rather vague or not technical enough and have consequently been discarded. Among these are the definition of a socialist society as a social organization in which individuals are prevented from conducting their private economic activities in manners they deem most expedient (see Menger, 1883, p. 212), which is similar to Hayek's (see Cubeddu and Vannucci, 1993, pp. 85–6) and the definition put forward by those who assume socialism to be a model which structurally favours material equality (see Cunningham, 1987, Chapter V). Another important definition of socialism which closely resembles Hayek's is Durkheim's (see Durkheim, 1928, Chapter I), but here we cannot expatiate on Durkheim's views on socialism altough they are very interesting.
10. The definitions of property by other authors such as Cohen (1978, Chapter VIII) and Roemer (1993, pp. 89–90) closely recall Mises'.
11. This view also seems to be shared by those who, like Temkin, are inclined to agree with Hayek on all the subjects that have been discussed so far (see Temkin, 1983, p. 214).
12. As mentioned earlier in this book, during the socialist calculation debate of the 1930s even economists of the socialist front were agreed on the idea that socialism was a non-rivalrous social order (see, for instance, Lerner, 1934, pp. 55–6).
13. Regarding this, Keynes wrote: 'State Planning, as I conceive it, would not be administered or supervised in detail by democratically elected bodies. The latter would be judges, not of first, but of final instance, reserve forces to effect a change when grave mistakes have been made' (Keynes, 1932, p. 92).
14. Among those who draw a difference between capitalism and market economy, let us mention Braudel (1977, Chapter II), though Braudel bases his distinction on a completely different rationale from ours.
15. As of today, the prevailing tendency is to distinguish between capitalism, planned economies, that is, systems directed by the commands of a central planner, and market socialism, a system only characterized by the social ownership of production means (see, among others, Malle, 1989, pp. 21–2). Roemer (1994, Chapter 2) is one of the authors who contend that the public ownership of production means is no longer an essential feature of socialism.
16. Quoting Keynes, 'we can accept the desirability and even the necessity of *planning* without being a Communist, a Socialist or a Fascist' (Keynes, 1932, p. 84; emphasis in the original).

17. Even those who have recently maintained that Hayek did devote much of his talents to criticizing the theory of market socialism as being impracticable and ethically indefensible constantly refer to his earlier articles. Above all, they fail to make it clear that Hayek's criticisms were never directed at a form of market socialism *with autonomous firms* (see Di Quattro, 1986, pp. 307–8).
18. But recently, after a review of Hayek's criticism of market socialism, Lavoie examined a number of market socialism models without autonomous firms and concluded that they were the only ones that could rightly be categorized as such (see Lavoie, 1986, pp. 215–21).
19. The idea of the firm as a set of contracts is often attributed to Jensen and Meckling (1976), but Ellerman never mentions those two authors.
20. Ellerman uses the terms 'firm' and 'residual claimant' as synonyms (Ellerman, 1992b, p. 158).
21. 'Traditional but contingent contractual fact patterns (e.g. capital hiring labor) have been misinterpreted as present property rights. These misunderstandings reach the foundations of capital theory and the theory of the firm in neo-classical economics' (Ellerman, 1992b, p. 157).
22. The real import of Ellerman's thesis will be better understood by reference to the contention, widely shared today, that economic science is ever more markedly becoming the 'science of control' rather than 'the science of choice' and that the maximizer must consequently be replaced by the intermediary, an external agent who endeavours to make a choice between competing trade-off solutions (see Buchanan, 1975a, p. 229).
23. According to a different and even better-known argument it is the party whose contribution to the team work is most difficult to assess that becomes the active party in the contract of employment and, hence, the entrepreneur (see Barzel, 1987a, and Eggertsson, 1990, pp. 165–70); see further on, Chapter 12.
24. Ellerman's conception can be associated with that of Horvat, according to whom in a society which is not based on exploitation all ownership must be social and social ownership also involves as a basic rule the following right/obligation: 'every member of society derives economic benefits exclusively from his work, and none from property' (Horvat, 1991, p. 169). According to Horvat, 'the right (to the product of his work) and obligation (nothing but the product of his work) serve as a basis for the application of the principle of distribution according to work' (ibid.).
25. See Alchian and Demsetz (1972, pp. 777–8 and, for instance, p. 794). Also see, among others, Cheung (1983) and the first chapter of Eggertsson (1990) entitled 'The contractual nature of the firm'.
26. From among the many errors inherent in the failure to realize that the firm is not a property right let us mention, for example, the contentions of those who maintain that authoritarian structures will only be efficient if property is centralized, since only in such a case the improper performance of an instruction may entail the exclusion from economic activity (see Daems, 1980). There is no doubt, in fact, that in a situation of unemployment the manager of a public company dismissing a worker for not performing his/her employment contract may well determine the (definite) exclusion of that worker from economic activity (even when property is not centralized).
27. The notion that a firm arises from contracts has received much attention in recent neo-institutionalist literature, but this has resulted in great, and not little weight being attached to ownership rights. For example, the reason why firms are run, as a rule, by the owners of capital is usually traced back to the fact that control and supervision functions are more efficiently performed by the owners of the specific firm input who earn the greatest profits or incur the most substantial losses if the firm is successful or unsuccessful

(see Alchian and Demsetz, 1972; Alchian, 1987; Eggertsson, 1990, pp. 170–75; and our own comments further on, in Chapter 12).

28. See Sections 1 and 2 above.

29. According to Alchian and others, buying capital goods instead of renting them is especially convenient because operators who have the property of the capital goods run no risk of being expropriated of the returns on asset-specific investments (in the sense propounded by Williamson) (see Klein, Crawford and Alchian, 1978; Alchian, 1984; Eswaran and Kotwal, 1989). If their capital goods were rented, 'neither the user nor the producer could change its partner at low cost and machines would be undersupplied because of the fear of post-contractual opportunistic behaviour' (Pagano, 1991, p. 324). In their seminal 1972 article Alchian and Demsetz observed that capital goods were seldom leased because the insufficient care with which non-owners tend to use (and thus damage) them involves high monitoring costs (see Alchian and Demsetz, 1972, pp. 791–3).

30. A very similar classification to ours is found in Buchanan (1985, pp. 145–8), though Buchanan is among those who doubt that labour management is a form of genuine socialism. Conversely Roemer (1994, Chapter 6) has recently defined at least seven different forms of market socialism.

31. Przeworski's definition of capitalism recalls Ellerman's. In his opinion a capitalist system is one in which any *surplus* is appropriated by the owners of production means, while hired workers have no institutional title to any share of such surplus, although it is they who directly produced it (see Przeworski, 1985, p. 138). This definition obviously implies that the opposite of a system in which the surplus is not appropriated by the owners of the production means, but assigned to workers in their position as its direct producers is labour management.

32. In Ellerman's own words, his classification 'is based on the Copernican paradigm shift to seeing capitalism as revolving around the employment contract instead of around the private ownership of the means of production' (Ellerman, 1992a, p. 19).

33. Durkheim also propounded two types of socialism. In the history of socialism, he wrote, we come across two movements which helped establish it: an upward movement starting from the bottom and a downward movement starting from the upper classes of society. Consequently there are also two different kinds of socialism: workers' socialism and state socialism, the difference between which is, according to Durkheim, only a difference of degree (see Durkheim, 1928, p. 26; also see, among others, Plant, 1989, p. 74).

34. If, indeed, the conclusion is that a firm works more efficiently if workers are granted shares of its profits, then the more rational solution is to pay workers variable wages and salaries also in firms where decision-making rests with managers; on the contrary it seems unreasonable to assume that a firm managed by workers should pay its members fixed wages and salaries.

35. The Yugoslav theorists of labour management have constantly maintained that a truly socialist system must be based on labour management. On this point see, first of all, Horvat (1982, pp. 283 ff. and 1990), Bowles and Gintis (1986) and Cohen and Rogers (1993). Miller also terms labour management 'the pure model of market socialism' (see Miller, 1990, p. 10).

36. As Ellerman states, 'collective self-employment in the firm is the economic analogue of political self-government or democracy' (Ellerman, 1992a, p. 4).

37. Let us mention here that Mises equated capitalism with full economic democracy and thus expressed the somewhat preposterous view that a system in which those in charge of production can freely decide what is to be manufactured was 'the opposite of what we are accustomed to call democracy', because it would be 'as, say, a political constitution under which the government officials and not the whole people decided how the state was to be governed' (see Mises, 1932 and 1951, p. 11).

38. As Bardhan observed, in principle it is not difficult to create a market of managers capable of stimulating them to manage their firms efficiently: it will suffice to put in place and enforce the rule that the reputation and the future earnings of managers are dependent on how effectively they managed their firms in the past. The crux of the problem is that it takes time and suitable institutions to bring about a managerial culture which will induce managers to compete for the best firms and highest earnings (see Bardhan, 1993, p. 146).

39. Quoting Ruffolo, in current debates concerning socialism 'the true problem is no longer how to socialize property, but how to socialize the entrepreneurial function' (see Ruffolo, 1977, p. 105 and, for example, Rosanvallon, 1976, pp. 82–3). For a number of suggestions on how to overcome the problem raised in the text, see Bardhan and Roemer (1992) and Bardhan (1993).

40. There is every reason to believe that managerial socialism would be open to the serious criticism of socialism which was first unreservedly expressed by Machajsky (in 1899) and made a great impression on the young Leon Trotsky: the objection that a socialist system, by its very nature, would not work in the interests of the proletariat, but in the interests of a new social class, the growing army of the intelligentsia and new middle class; in the eyes of this Polish revolutionary, a revolution enacted under the banner of socialism would bring about a sort of state capitalism in which technicians, organizers, administrators, educators and journalists (in short 'the intelligentsia') would be the new class exploiting workers (see Bell, 1960, pp. 335–6).

41. According to several authors, those who contend that the distinctive feature of socialism is labour management are true to Marxian theory on this point (see, among others, Damjanovic, 1962; Bourdet, 1974, pp. 49 ff.; Pelikan, 1977, pp. 143 ff.). But there are obviously some who take the opposite view (among them Brus, 1975, Chapter 2, Section 3; Pellicani, 1977, p. 70, note 6; Infantino, 1978, p. 67; Buchanan, 1985). For a balanced and highly convincing assessment of this problem, see Hegedüs (1979, pp. 96 ff.).

6. Market socialism and income distribution*

> Socialism is a system of communal (or social) ownership of the means of production, established for the purpose of making (or keeping) the distribution of income, wealth, opportunity, and economic power as nearly equal as possible. (Landauer)

6.1 INTRODUCTION

To this very day there has been little consensus on the proposal of market socialism even among socialists. On the publication of Lange's contribution a man with a sound background in economics such as Karl Korsch was 'horror-struck' and argued that 'it was concerned with the economics, not of socialism, but of fascist and/or state capitalism'. He branded Lange's paper as 'a trivial mumbo-jumbo, obsolete and sterile'; and in a letter to Mattick he said he was tempted 'to write a detailed analysis of this intepretative line (which stretches from Barone to Lange) in order to throw some light on an issue on which both sides are writing nothing but rubbish' (Korsch, 1934–39, letter of 22 November 1938).

Four years later Schumpeter also declared himself unsatisfied with Lange's proposal:

> I have, it is true, pointed out myself that the method of constructing a 'market' of consumers' goods and of orienting production according to the indications derived from it will come nearer than any other, for instance the method of decision by majority vote, to giving each individual comrade what he wants – there exists no more democratic institution than a market – and that in this sense it will result in a 'maximum of satisfaction'. But this maximum is only a short-run one and, moreover, is relative to the actual desires of the comrades as they are felt at the moment. Only outright beefsteak socialism can be content with a goal such as this. I cannot blame any socialist for despising it and dreaming of new cultural forms for human clay, perhaps of a new clay withal; the real promise of socialism, if any, lies that way. (Schumpeter, 1942, p. 184)

In subsequent years most Marxists and staunch critics of capitalism shared Schumpeter's view that market socialism was not a truly socialist system and even today, despite the upheavals caused by the breakdown of the Soviet

system, Marxists continue to argue (from different theoretical perspectives) that market socialism would be ineffectual (that is, would not mark any significant progress over capitalism), impracticable (because of its notorious lack of incentives) or even dangerous (because it still clings to some of the fallacies that precipitated the collapse of the Soviet system).

As will be shown in detail in the rest of this book, the authors are convinced that market socialism with labour-managed firms does offer a number of major advantages over capitalism. The first of these concerns income distribution, since both managerial socialism and socialism with labour-managed firms allow personal incomes to be distributed according to social criteria.[1] A second major advantage of labour management which we must emphasize before we proceed to the detailed analysis of how this form of market socialism works is the fact that it eliminates or reduces alienation from work. This is why the first part of this chapter will be concerned with the important issue of income distribution in socialism which was touched upon in passing in previous chapters.[2]

More particularly, in Sections 2, 3 and 4 of this chapter we are going to discuss the arguments and proposals on income distribution contained in the contributions by Barone, Taylor and Lange that have already been analysed before; in Section 5 we will address the problem, first raised by John Stuart Mill, whether distribution can actually be regulated to a large extent independently of production; in Sections 6 and 7 we are going to examine how an optimum distribution of income can be achieved in managerial socialism and in socialism with labour-managed firms. Finally, in the appendix to this chapter, we will explore the problem of alienation from work.

6.2 INCOME DISTRIBUTION IN BARONE'S AND TAYLOR'S CONTRIBUTIONS

How can market socialism be expected to achieve optimal income distribution? This problem must be raised because, if market socialism is actually a market system, income distribution may be assumed to be automatically determined at the precise level at which the supply of each production factor equals demand for it – in which case one might assume that it would afford no progress over capitalism. But what was written on this issue during the socialist calculation debate?

In the first major contribution on the subject Enrico Barone, having clarified that a socialist order would be able to fix prices rationally only if the 'Ministry of Production' identifies scarcity indexes, explicitly addressed the issue of the optimal income distribution in socialism. As we know, in Barone's model it is the state that owns all production means and it is the state that consequently appropriates all the income derived from capital goods. This in turn raises the problem of how the revenue appropriated by the state will have to be distributed. As Barone did not address the problem of the optimal accumulation rate, in theory the collectivity may benefit from the advantages of the social ownership of production means in two different ways: through the *direct* distribution of what may be called the *social dividend* and through the straightforward abolition of all returns on capital. In the former case each worker would receive (in addition to his/her wages) a specified portion of the social dividend; in the latter the prices of products would have to be fixed in such a way as to reflect only the labour costs incurred for producing them and to prevent the state from appropriating any part of the income derived from capital goods. According to Barone this *indirect* distribution mode is an application of the labour theory of value and it is incongruous[3] because capital goods will be efficiently used only if they are assigned precise scarcity indexes and employed in situations in which their use proves most profitable. The right thing to do is thus to distribute the social dividend *directly*, in accordance with a specific criterion of social justice.

It thus seems correct to say, at least with respect to a socialist system, that Barone's contribution reproposes Mill's idea that income distribution is not mechanically determined by the law of demand and supply, but can be socially determined in line with a selected principle of social justice.[4]

Fred Taylor's approach does not substantially depart from the above. He argued that in socialism pricing should be left to the market and fixed at the level where demand equals supply everywhere for each single product; but as for distribution, he added, the authorities of a socialist state would 'honestly and earnestly' have to endeavour 'to fix those incomes so that they represent that distribution of the total income of the state which is called for in the interest of citizens generally and of the group as an organic whole' (Taylor, 1929, p. 44). In all probability Taylor had in mind either the dual factor pricing system which subsequently roused much debate or the correction of the results of the spontaneous operation of market mechanisms obtained by redistributing the profits appropriated by the state.

We should bear in mind that in Taylor's view the prospect of achieving a socially acceptable distribution is a further argument for having the prices of consumer goods fixed by the market. 'This socially correct system of incomes being assumed', he wrote, 'it necessarily follows that the judgements reached by citizens with respect to the relative importances of different commodities would be virtually social judgements, and the resulting commodity prices would be prices which expressed the social importances of commodities' (Taylor, 1929, p. 44).[5]

In conclusion, both Barone and Taylor (not to mention other authors) basically accepted the view that a market economy allows distribution to be

determined according to social criteria and they both highlighted one main advantage of market socialism: the possibility of distributing profit in line with criteria of social justice and, accordingly, achieving the kind of income distribution that is thought to be most appropriate.

6.3 INCOME DISTRIBUTION IN LANGE'S CONTRIBUTION

Lange's stance on the subject is a rather more complex one. According to him:

a. income distribution is optimal when the value of the marginal product of labour equals (Lange mistakenly wrote 'is proportional to') the marginal disutility of labour in every single industry and occupation;
b. a socialist system is, by its very nature, in a position to achieve such optimal income distribution provided it imitates the market in its own way.

Setting out from the assumption that optimal income distribution is possible in a socialist system which uses or imitates the market, Lange had some difficulty in solving the problem of the best possible use of the social dividend. If labour services have already been apportioned among several occupations in the best possible way before the social dividend is distributed, what criteria should be followed when distributing the latter? In his opinion, the planner will have to arrange things in such a way as to bring about a precise relation between the social dividend and the marginal disutility of the labour used; and this can be obtained, he wrote, by apportioning the social dividend in proportion to wage rates (see Lange, 1936–37, pp. 64–5).

But Lange's solution is evidently marred by a mistake which Lerner was quick to point out: wages must be, not proportional, but equal to the marginal disutility of labour; and this means that when it is assumed that firms set out to maximize profit by fixing wages at the level of the marginal productivity of labour, while workers supply their services at the level at which the wage rate equals their marginal disutility of labour, it will be impossible to determine any single ratio of social dividend to wage rate which does not disrupt the equality between labour remuneration and marginal disutility of labour. Lerner's conclusion was that those accepting Lange's assumption would have to contend that the social dividend can be distributed based on a variety of criteria of social justice, but *not* in proportion to the wage rate (see Lerner, 1936, pp. 73–4).

Lange was equally quick in admitting his error and accepting Lerner's solution (Lange, 1937, p. 143).[6] Thus the solution to the problem of distribution that Lange proposed after Lerner's correction recalls both Barone's and

Taylor's. Commenting on Lange's proposal, it will thus suffice to argue that his idea that a socialist system imitating the market is in a position to achieve a distribution of income at which the marginal product of labour equals the disutility of labour in all industries and occupations (the so-called 'second postulate of classical theory') is far from convincing. In point of fact this second postulate of classical theory is applicable to a socialist system with labour-managed firms, but not to other forms of market socialism (including the organizational model Lange originally seems to have had in mind), because while in the former workers are free to fix their hours of work themselves, in the 1936–37 Lange model they are not assumed to have this freedom.

Another major point which Lerner made on the subject of income distribution has a substantial bearing on what we will say further on. In point of fact it is one of the strongest arguments which can and must be set forth in support of market socialism. Lerner argued that a socialist system affords a much better distribution of income than a capitalist system because it does away with all forms of rent, that is, all income deriving from the ownership of urban and farm land (see Lerner, 1937, pp. 269–70). As the nationalization of production means involves the right of the state to appropriate both profits and rents, this thesis may be said to have been implicitly contained in Barone's, Taylor's and Lange's propositions, but the additional emphasis on rents was certainly appropriate since it threw further light on the circumstance that the abolition of non-labour incomes – which in capitalism account for a substantial portion of the revenue produced – is a formidable means of regulating income distribution in line with social criteria.

6.4 DOBB'S CRITICISMS

Thus the main argument for market socialism seems to be the prospect of achieving a socially desirable income distribution despite the ample scope granted to market mechanisms.[7] As can be inferred from what has been said above, Barone, Taylor and Lange may be assumed to have shared this view, but the opinions of other authors are found to diverge greatly on the subject of how this optimal distribution of income should be implemented in practice. At one end of the spectrum there are those who contend that socialism is first and foremost intended to achieve equal starting conditions. And according to these, once equal starting conditions are secured, optimal income distribution will have to be reached by levelling demand and supply in every single labour market. At the opposite end of the spectrum there are those who altogether deny that distribution can be left to the market mechanism.

The latter share Dobb's idea that in market systems 'there are some analogous characteristics in the manner in which labour is engaged and wage-

differentials for various occupations are formed', so that (in the minds of those who defend the values of socialism) 'to speak of a market for labour, or even a quasi-market, would be to invite strong disagreement from many, who would expect income differences to be determined by other considerations than market scarcities and transitory conditions of demand and would deem it incongruous if a socialist society failed to give ethical considerations a place in its incomes-policy' (Dobb, 1969, pp. 145–6). While they do not deny that as soon as production means are nationalized 'market valuations would cease to be distorted as they are today and would become a much surer criterion of social utility' (Dobb, 1939a, p. 241), they maintain that an optimal income distribution could be achieved only by devising policies suited to correct the market mechanisms and to do away with the imbalances which the market inevitably generates.[8]

In other words, as Dobb and many other socialist authors share the view that socialism has its main justification in the possibility of achieving a socially desirable distribution of income, they tend to criticize those who argue that the socialist planner must simply correct the distribution spontaneously generated by the market. Consequently they suggest that a socialist government should democratically devise a distribution which social conscience is prepared to deem the best possible and then commit itself to implementing it in practice.

This argument of Dobb's comes across as thoroughly convincing. If it is true that one of the main objectives of socialism is the attainment of the best possible distribution of income, it will barely seem realistic or convenient to pursue this objective by having the market determine its distribution spontaneously and then trying to correct it *ex post*. As we see it, Barone, Taylor and Lange's proposal to rely in the first place on the market mechanisms is not particularly realistic if the purpose to be pursued is optimal social income distribution: if the distribution that the market brings about in a capitalist system is thought to contradict an advanced social conscience, how can it be assumed that the market will not result in a markedly unbalanced distribution in market socialism as well? Diverging views on the matter seem to stem from *a priori* reasoning which has its only rational justification in the idea – still to be backed up by adequate evidence – that competition would be much stronger in market socialism than in capitalism. As mentioned before, this was indeed what Lange assumed, but we want to object that this argument might perhaps apply to the Lange–Taylor model, though not to the model of market socialism with autonomous firms.[9]

Barone, Taylor and Lange's proposal is incongruous and barely defensible because (as mentioned before) it suggests relying on the market mechanisms and then correcting the distribution spontaneously generated by the market by recourse to the social dividend. If we assume that the size of the social dividend is such as to allow the distribution determined by the market to be corrected in whatever manner is deemed fit, what would be the point in following this indirect route, that is, why should we bring about a non-optimal distribution *first* only to correct it *then*? Would it not be better to use the economic levers afforded by the social ownership of production means in order to determine the best possible distribution of income directly, through democratic decisions? If the distribution spontaneously generated by the market were altered, this would certainly arouse opposition from those whose interests are prejudiced by the redistributive action and they would certainly insist on the need to respect the logic of the market. Conversely, there would be less opposition from those favoured by the market if income distribution were not determined by the market mechanism right from the beginning. In the absence of any adequate terms of comparison (the distribution spontaneously generated by the market), who can validly oppose a distribution devised according to fully democratic criteria?

Hence the question: can a market economy bring about a distribution of income which is really in keeping with social criteria?

6.5 ARE THE LAWS OF DISTRIBUTION MECHANICALLY DETERMINED?

As is well known, a central (and frequently quoted) assumption in Mill's thought is that the laws of production are objective and mechanical, that is, derived from modes and conditions imposed by nature, while the laws of distribution can be changed by the legislator, that is, are subject to (human) control and depend on 'the laws and customs of society' (Mill, 1871, pp. 199–200). In other words, Mill holds that 'the laws and conditions of the production of wealth partake of the character of physical truths' and 'there is nothing optional or arbitrary in them'; whereas the distribution of wealth 'is a matter of human institutions solely', so that once commodities have been produced, 'mankind individually or collectively, can do with them as they like' and can make them available to whoever they like and on any terms whatsoever (Mill, 1871, pp. 199–200).[10]

This view was criticized by Marx (see Marx, 1847), but was none the less reproposed by other authors time and again. Lange undoubtedly adopted Marx's perspective when he argued that Mill's idea lies at the basis of all *lower middle-class* criticisms of capitalism (see Lange, 1958b, pp. 311–13), but as in orthodox theory it is often assumed (albeit with due caution) that income distribution may be thought of as being fully autonomous (see, among others, Malinvaud, 1982, p. 1), we do not think that it is still possible to side-step this argument without giving it due attention. The first thing to do is thus to ascertain the real terms of the issue raised by Marx.

In *Theories of Surplus-Value* Marx wrote, without expatiating on the subject: 'The form of distribution is simply the form of production seen from a different point of view. The specific features – and therefore also the specific limitation – which set bounds to bourgeois distribution, enter into bourgeois production itself as a determining factor, which overlaps and dominates production' (Marx, 1862–63, vol. III, p. 84). In another passage of this same work, Marx also contended that Sismondi, having failed to see that 'the form of distribution is simply the form of production seen from a different point of view', made serious errors and ended up as a sort of *laudator temporis acti* because he convinced himself that 'a different adjustment of revenue in relation to capital, or of distribution in relation to production could exorcize the contradictions of capitalism' (Marx, 1862–63, vol. III, p. 56). And Marx's criticism of Mill's idea on the subject is even more severe (Marx, 1862–63, vol. III, p. 84).[11]

In Volume 3 of *Capital* Marx examined the relationship between production and distribution in much greater detail. Once again he criticized Mill's assumption that the relations of distribution are the result of historical evolution and his firm belief in 'the supposedly constant character of the relations of production themselves as arising from human nature and hence independent of all historical development' (Marx, 1894, p. 1018), and then he re-emphasized his view that 'the relations of distribution are essentially identical with these relations of production, the reverse side of the same coin, so that the two things share the same historically transitory character' (ibid.). On closer analysis, however, Marx's line of reasoning in *Capital* departs from the one he adopted in *Theories of Surplus-Value*.

Comparing the quotations, in the latter work Marx criticized Sismondi for failing to realize that the relations of distribution are basically the same as the relations of production and thus for suggesting that the contradictions inherent in capitalism might be solved by changing distribution. As is well known, this is the idea of the theorists of underconsumption, including Keynes: in order to redress the imbalance between the rapid growth of productive capacity and the slow growth of consumption expenditure – an imbalance often assumed to be specific to capitalism – distribution must be changed in favour of workers. In *Capital*, on the contrary, Marx set out from the same assumption (the equality of the relations of distribution and the relations of production), but he merely criticized Mill for failing to recognize that the relations of production are no less transitory.

As this issue was dealt with in greater detail in *Capital*, it is possible to conclude that in this work Marx's criticism of Mill concerns only the transitory nature of the relations of production. Nowhere in *Capital* did Marx speak of capitalist distribution as mechanically determined; and nowhere did he suggest that different historical circumstances, political decisions or a different balance of power would be unable to change distribution substantially.

Having examined the idea of Mill we are reviewing here, in the above-mentioned chapter of *Capital* Marx merely maintained that 'the scientific analysis of the capitalist mode of production proves the contrary, that is, that this is a mode of production of a particular kind and a specific historical determinacy' (Marx, 1894, p. 2018); and slightly further on he added that Mill's error concerning the relations of distribution arises every time 'a historical character is claimed for these in contrast to the relations of production' (Marx, 1894, p. 1019). Nowhere in these passages did Marx deny that capitalist distribution could be changed.

Although Chapter 51 of Book Three of *Capital* is entirely concerned with the 'Relations of Distribution and Relations of Production', it does not criticize Sismondi for failing to see that capitalist distribution cannot be substantially changed in favour of workers. It does develop the thesis that 'the wage assumes wage-labour, profit assumes capital' and that 'these specific forms of distribution thus assume specific social characters for the conditions of production and specific social relations for the agents of production' (Marx, 1894, p. 1022), but it does not address the possibility of changing capitalist distribution. To back up his thesis that the relations of production are identical with the relations of distribution Marx argues that the capitalist mode of production is entirely governed by the pricing system and that output prices are determined by the profit rate and the wage rate (see Marx, 1894, pp. 1022–3), but the possibility of permanently reducing the profit rate is not discussed. Let us emphasize again that as far as profits, wage rates and rents are concerned, the thesis propounded in this chapter is that 'the capitalist distribution is different from those forms of distribution that arise from other modes of production, and every form of distribution vanishes along with the particular form of production that it arises from and corresponds to' (Marx, 1894, p. 1023).

It is a well-known fact that Marx's ideas on the prospects of radically changing capitalist distribution are not always concordant, so that it is very difficult to extract a consistent body of theory on this subject from his work. In part this is due to the fact that Marx never had the time to write the book on salaried work he had planned in the 1857 outline of his work (see Rosdolsky, 1955 and 1968, pp. 10 ff.). In Book One of *Capital* he maintained that the wage rate tends to equal the reproduction cost of the labour force, but is also affected by the capital accumulation rate and varies in time as a result of changing historical and social circumstances (Marx, 1867, pp. 747–9 and 762–72); but in *Wages, Prices and Profit*, which he wrote in 1865 to refute the theses of Weston (that is, the contention that distribution was not affected by the class struggle), he maintained that 'an immense scale of variation is possible' between the several different wage rate levels over a given timeframe and that 'the fixation of its actual degree is only settled by the continuous struggle between capital and labour' (Marx, 1865, p. 72). And when, in 1875, Engels wrote (in a letter to August Bebel) that the laws governing wage rates are highly complex and flexible, not as solid as rock, he was re-emphasizing the notion that wage rates and profit levels could greatly vary from one period to another (see Engels, 1875, p. 982).

Thus we may conclude that to counter Mill's idea that the laws of production are eternal while the laws of distribution are historically determined Marx merely objected that the laws of production are no less determined by history. And this raises the problem of whether Marx's criticism of Mill can still be validly opposed to those who (like Barone and Lange) continue to cling to the notion that although market socialism does not necessarily affect the relations of production, it none the less marks a decisive step forward over capitalism in that it may afford a socially optimal distribution of income.

Without exploring this vast and important issue to the full, we feel confident to reply in the negative both from a Marxist perspective and from a non-Marxist one, because the problem can easily be solved as soon as the real implications of Marx's objection to Mill are made clear.

From a Marxist perspective, market socialism can be viewed as a transitional system, a form of social organization which differs from capitalism because it fully nationalizes production means without abolishing the market and without necessarily reversing the capital–labour relation. This means that the relations of production may remain in essence what they are in capitalism, while the relations of distribution will thoroughly change. But if market socialism is a transitional system, then nothing will prevent the relations of productions from changing in a different economic system as well.

From a non-Marxist perspective, it seems quite easy to assume the existence of a (capitalist or socialist) economic system in which the relations of production are in essence those of capitalism, while the relations of distributions are determined in accordance with principles of a prevailingly social nature (see, for example, Di Quattro, 1978). As has been shown above, even Marx's criticism of Mill is not to be interpreted as denying the possibility that the distribution pattern of a capitalist system is governed, not merely by economic criteria, but also by socio-political forces (class struggle or other).[12]

6.6 INCOME DISTRIBUTION IN MANAGERIAL SOCIALISM

Thus, if distribution can be determined to a large extent or even entirely by socio-political forces, how is it to be determined in market socialism?

The relevant procedures will vary greatly from managerial socialism to labour management. As for the former, which (as mentioned above) we are not going to discuss in detail, the problem is easily solved. In a system of publicly -owned firms with salaried workers the Central Administration Bureau will have to devise the pay structure deemed to be the best possible and then leave single individuals free to choose the occupations they prefer. An optimal pay structure is one which best reconciles two opposed needs: (a) making distribution as equitable as possible, and (b) maintaining an effective system of incentives to work. Once the pay structure has been devised in line with social and political criteria, the problem of equalling demand and supply of labour in the single sectors of production activity remains to be solved. And as it is far from easy to use the price mechanism for this purpose, the best system available to select the best workers is competitive examination.[13]

It is worth noting that employment by competitive examination is not incompatible with granting those involved in production a certain measure of profit-sharing. In managerial socialism, therefore, distribution in the public sector of the economy (which may or may not be the whole system) should be as follows:

a. the base pay structure should be fixed by the central authority through democratically-made decisions;
b. jobs should be assigned by competitive examination;
c. managers should be assessed on the job and promotions should be based on the profits of the firms they run; consequently they may be replaced if they do not earn sufficient profits or incur losses;
d. all workers, regardless of whether they serve in a managerial or non-managerial capacity, may be in part remunerated by being given shares of the firm's profit.

'To assume that it is possible to create conditions of full competition without making those who are responsible for the decisions pay for their mistakes seems to be pure illusion', Hayek wrote in the conclusions of his 1940 article (see Hayek, 1940, p. 203). But as we take it for granted that the managers of the autonomous firms of this system will have to assume full responsibility for the decisions they make, we cannot see why the type of distribution mentioned above should not work.

6.7 INCOME DISTRIBUTION IN A LABOUR-MANAGED ECONOMIC SYSTEM

As far as labour management is concerned, let us set out from the idea that all the firm's earnings are apportioned among the workers. As in a system with labour management the incomes of workers vary (as will be shown in detail below) according to the performance of the firm, it will be necessary to devise a general rule for achieving a kind of income distribution which will minimize the conflict between different categories of workers.

The prevailing view is that the best possible system is to divide workers into a number of categories and to assign a 'score' to each of them. In this way each worker would know what *share* of the profits he/she is going to be granted *before* actually starting to work, that is, by merely being assigned to a precise category. The 'score' (or 'coefficient') would be used to establish how many wage units each worker of a given category is entitled to; based on the number of workers of each category employed in each firm, the exact number of wage-units into which the firm's total revenue will be split can be determined before starting up production and the workers' shares of the firm's revenue will be known right from the beginning.[14]

While the total income to be apportioned among all workers (that is, the difference between the net receipts of the firm and the taxes and costs of production factors it has incurred) varies from time to time, the share to which each worker is entitled will be a fixed percentage rate of the variable aggregate amount to be distributed.[15]

The importance of this distributive rule lies in the fact that it prevents any contrasts concerning the apportionment of such revenue among the members of the labour-managed firm. As will be shown further on, one advantage of labour management is the abolition of every conflict of interests between classes; but let us repeat that this production mode would be greatly vitiated if the distributive rules were to set one worker against another in any firm. Thus the above-mentioned coefficients will not only have to be fixed before starting up production, but also assigned to each single worker by a central committee or, in any case, by a public authority devising systems of examination or job evaluation.

To what has been said one may object that, if a system with labour-managed firms is a genuine market economy, also the wage structure is determined by the market according to the law of supply and demand. As will be pointed out below, in the classical labour management model proposed by Ward and Vanek, firms pay the state a rental charge proportional to the capital available and then apportion their earnings among the several categories of workers based on the 'coefficients' or 'weights' mentioned before. In this model, Drèze observes, 'at first sight, rental charges would seem to be determined outside, and labor weights inside, the firm'; but on closer analysis 'both types of parameters are determined at the more general level of inter-firm equilibrium', that is, in a general equilibrium analysis (Drèze, 1985, p. 12). If this is true, what sense does it make to agree with Mill, and say that distribution can be determined according to economic and social criteria?

The answer obviously lies in the fact that supply of and demand for labour can be controlled by state intervention in the economy. In particular, labour supply can largely be regulated by the school system and, later on, by assigning workers to different categories or work descriptions based on competitive public examinations (as mentioned in the previous section). Similarly, though to a lesser extent, labour demand can be regulated by enforcing a suitable tax system.

As for hours of work,[16] these could be the same for everybody and could be either fixed by a vote cast in workers' meetings or left to the choice of single individuals. In the latter case each member of the labour-managed firm would fix his/her hours of work in such a way that the utility of the additional income he/she might earn by working one additional hour (on the basis of the distribution rule prevailing in the workplace) would equal the marginal disutility of his/her work. In the former case, instead, that is, in Berman's so-called 'cartel solution' (see Berman, 1977), the decision-making process would have to be established by law or regulation: assuming, for instance, that Tom wishes to work 20 hours a week while Dick and Harry would like to work 40 hours a week, will a decision be made by a majority vote or will the hours be fixed at the average number proposed by the single members of the firm?

Problems are likely to arise if the choice of optimal hours of work is left to single workers. As has been shown, if the distributive rule is 'pay each one in proportion to the work done' and everyone is free to decide how many hours he/she wants to work, single individuals might want to work more hours than would be in the interest of all the members and it might prove impossible to devise a stable equilibrium. Above all, even admitting that such a solution actually exists, the equilibrium resulting from the choices of single workers might make everyone worse off than they would be if each of them worked less. This implies that the 'cartel solution', whose prerequisite is cooperative behaviour, might be more advantageous than the solution of letting workers freely choose their hours of work (see Berman, 1977; Giannola, 1989b). This problem will be discussed in depth in Chapter 9.

In a number of pages which were not published in his lifetime but have recently received much attention from economists, Keynes emphasized one interesting implication of the decision to leave the members of a cooperative firm free to fix their hours of work. Arguing that the 'second postulate of classical theory' (that is, the levelling of marginal productivity and marginal disutility of labour) is applicable to an economic system in which all firms are cooperatives and setting out from the fact that Say's law is likewise applicable in any situation in which this postulate is valid, he concluded that a system with cooperative firms would always have equilibrium with full employment (see Keynes, 1933). This subject will be analysed in detail in the next chapter.

Lastly, on the subject of income distribution we must emphasize that the model of self-management we are proposing here enables workers to earn interest on their financial activities, while other, even fairly moderate market socialism models do not envisage any interest payments whatsoever (see Yunker, 1992, Chapter 2).

6.8 THE DIVISION OF LABOUR IN A LABOUR-MANAGED ECONOMIC SYSTEM: INTRODUCTORY REMARKS

Income distribution and division of labour are closely interdependent because the functional distribution of income depends, by definition, on the functions assigned to single workers and the degree of specialization of their jobs, and also because the distribution of personal incomes, though to a great extent dependent on the working potential of single individuals, is strongly affected by the existing division of labour. Consequently there is every reason to assume that distributive inequalities would be less accentuated in a society with a lesser amount of division of labour.

It is generally agreed, though with emphasis on different aspects of the issue, that labour management would result in reducing specialization. Capitalist societies are characterized by a marked division of labour combined with excess specialization, with minimum worker discretion and control in the workplace (and authoritarian supervision enabling management to monitor the commitment and performance of workers) and with 'Taylorism'. Yet capitalist specialization and Taylorism are not only the result of the efficiency target. As highlighted in the excellent analyses by Marglin (1974), Braverman (1974), Edwards (1979) and others, to a large extent division of labour is not intended to increase efficiency but to enable the management to exercise full control over production activity. Each worker is assigned just a few simple actions which he/she is called upon to do again and again in an obsessively repetitious manner – to the point where he/she becomes deadened, alienated, barely responsive and inclined to imagine him/herself as a link in a much greater mechanism which he/she hardly knows anything about and which he/she cannot control in the slightest. As mentioned before, this clear-cut division of labour is usually associated with almost zero autonomy of the worker as far as his/her production activity is concerned and with authoritarian supervisory control over his/her performance, until – as Marx theorized in his day – the worker is turned into a machine. Consequently, as specialization and repetitious work are in themselves causes of alienation, the capitalist working mode further accentuates alienation by depriving the worker of any control over his/

her actions and preventing him/her from identifying with the end-product of his/her work.

Thus, if the division of labour is to a large extent intended to exercise greater control over workers, it is apparent that a system with labour-managed firms, where workers are free to devise any organizational pattern they like, would do away with this aspect of the division of labour without reducing efficiency. And a lesser division of labour would certainly add to the well-being of workers and diminish their feelings of alienation.

But there is one further aspect of the problem which is certainly no less important. There is no doubt that specialization adds to worker efficiency and, within certain limits, may even be welcomed by the labour force itself. Nevertheless we have shown how excess specialization may detract from the quality of life in factories. Consequently, if the workers of labour-managed firms can freely choose the organizational modes they like, one will have to devise the optimal level of specialization. As a rule, growing levels of division of labour result in ever greater labour productivity although they make work more and more loathsome and less and less gratifying. This is why those in charge of assigning workers to single jobs, be it the meeting of workers or the management to which the meeting delegates its powers, will have to choose the optimum level of specialization knowing that there is a trade-off between productivity and utility of labour. And the solution to the problem is (as is well known) that workers will choose precisely that level of specialization at which the various jobs in their factories will afford them maximum well-being (bearing in mind the relevant effects on productivity and on the disutility of their work).

This opportunity, which workers in capitalist firms are denied, is thus a weighty argument in support of labour management. As a result of the two above observations, in labour-managed firms the division of labour will tend to be less marked than in capitalist firms and each worker may perform different tasks in the same working day or in successive periods. Furthermore, labour management will allow workers a say in the decisions of their firms and will consequently make them feel – at least in small-scale firms – more deeply involved in the decision-making process.[17]

The fact that existing labour-managed firms have failed to significantly reduce the division of labour is usually traced back to the hostile or alienating environment in which they have been conducting business to this day. Some authors argued that in a more favourable environment firms exclusively managed by workers might prove much more compatible with non-Taylorist working modes and that projects envisaging non-alienating working modes might fully flourish in an economic system where labour-managed firms could freely conduct whatever experiments they liked (see Putterman, 1993b, p. 143).[18]

6.9 CONCLUSIONS

According to some, market socialism leaves no scope for a Central Planning Bureau because prices are determined by the law of demand and supply, in line with minimum cost calculations, and demand and supply are not subject to control. The only function the bureau performs with respect to pricing – it is maintained – is to announce what is happening in the market. Although this statement sounds rather an exaggeration, there is no denying that in market socialism the role of planning might be very small and might mainly consist in determining income distribution.

None the less, devising the optimal income distribution is an all but negligible task. In a well-known book, Landauer wrote: 'socialism is a system of communal (or social) ownership of the means of production, established for the purpose of making (or keeping) the distribution of income, wealth, opportunity, and economic power as nearly equal as possible' (Landauer, 1959, I, p. 5).[19] And in spite of the divisive debate this issue has ignited, socialists have always been persuaded that one of the crucial problems a new social order has to solve is to devise a more egalitarian pattern of distribution (see the literature quoted in Chilosi, 1988 and, among others, Chilosi, 1990, pp. 378–83; Davies, 1990, pp. 8–13; Bardhan and Roemer, 1992, p. 103; and Roemer, 1993, pp. 89–90; for the reflections of Mikhail Gorbachev on the subject, also see, for example, Gooding, 1990, pp. 204–6).[20]

As is well known, staunch liberalists base their arguments on the first theorem of welfare economics, according to which under certain assumptions each equilibrium of perfect competition is in itself an 'optimal' equilibrium (a relative optimum) because no one can improve his/her condition without simultaneously making someone else worse off.[21] Some of them attach even greater importance to the second theorem of welfare economics, according to which (again under certain assumptions) any relative Pareto optimum can be reached by changing the initial distribution of resources among individuals. In point of fact Pareto's theorems require highly restrictive assumptions, in particular the absence of interdependent effects operating outside the market,[22] but the ability of the market to reach an optimum irrespective of the distribution pattern adopted in a society has nevertheless been viewed as a decisive argument for free-market economy.

The above contention can easily be countered by emphasizing that the second theorem of welfare economics is not an argument for economic liberalism. To achieve an initial distribution of resources which society may judge as an optimum it may be necessary to devise a *political* process involving the radical distribution of property – and this is likely to be impeded by contrasting forces generated by the existing distribution of resources (see, for example, Sen, 1983, pp. 4–5 and Stiglitz et al., 1989, p. 59). In other words, as has often been argued, orthodox welfare economics is lacking in realism and interpretative vigour, because it often assumes that the desired distribution of wealth is achieved through political decisions before the market process itself has begun, while in actual fact the relevant decisions are never made (see Section 8 of Chapter 4). Furthermore an optimal distribution of resources depends on the definition and allocation of the rights on which exchanges between individuals are founded; and each Pareto optimum is specific to a given legal structure with its huge variation margins (see Samuels, 1992, pp. 168–9).

From the above it follows that the second theorem of welfare economics is in no way a mainstay of economic liberalism because it may call for far-reaching state intervention in the economy (a radical redistribution of resources or an equally thorough reorganization of the legal structure) (see Dasgupta, 1989, pp. 113–14).

The system which actually affords the best possible solution to the problem of distribution is thus market socialism, and it is consequently this that may be said to achieve the ideals of socialism to the fullest extent. In view of the complexity of the problems involved, however, it may none the less be convenient not to jump to such a conclusion.[23]

NOTES

* This chapter is an enlarged version of pages which are already published in Jossa (1992).

1. A famous passage from Keynes's *General Theory* runs as follows: 'The outstanding faults of the economic society in which we live are its failure to provide for full employment and its arbitrary and inequitable distribution of wealth and incomes' (Keynes, 1936, p. 372). For those who accept this view, one of the strongest arguments for socialism is the existence of market inequalities in capitalism. Consequently it is correct, though somewhat vague, to define socialism as a social model which structurally favours material equality (see Cunningham, 1987, p. 105). Also see, among others, Brus and Laski (1989, p. 3) and Roemer (1994, Chapter 1).
2. The characteristic of socialism emphasized by Mises is that 'the distribution of consumption-goods must be independent of the question of production and of its economic conditions' (see Mises, 1921, p. 90).
3. Like many others, Barone misinterpreted the labour theory of value by assuming that it ruled out the payment of revenue to capital owners. Consequently his thesis that indirect distribution is the application of Marxian value theory is ungrounded.
4. In theory, by suitably raising taxes and/or granting subsidies, even a capitalist system would appear to be in a position to achieve any social income distribution that is chosen; in practice, however, such optimal income distribution is never actually realized.
5. Robinson and Eatwell have reached much the same conclusions (1973, pp. 267–8).
6. Obviously Lange did not repeat his mistake in his 1942 lectures, where he wrote that the social dividend can be distributed in accordance with any criterion that is deemed desirable, in particular by attributing approximately equal shares to everyone and, at the

same time, accounting for special situations (see Lange, 1942, p. 10). For a historical analysis of the reasons underlying Lange's mistake, see Lerner (1977, pp. 269–70).

In his proposal for 'a revised and modernised form of socialism', Yunker suggests distributing the social dividend in proportion to labour incomes, as Lange did in 1936-37, but he makes no reference either to Lange or to Lange's debate with Lerner (see Yunker, 1992, pp. 34–8).

7. See Roemer (1994, Chapter 1). In Mises' definition, 'socialism is nothing but a theory of "just distribution"; the socialist movement is nothing but an attempt to achieve this ideal' (Mises, 1932 and 1951, p. 131).
8. Einstein was confident that human reason would be able to devise a distribution method capable of functioning as efficiently as the production process (see Clark, 1971, p. 559) and Bertrand Russell argued that only an organization deliberately created with a structure conducive to the ends society intends to attain could be termed as fully scientific (Russell, 1931, p. 203). Hayek (from whose writings we are quoting) obviously refuted both these contentions, but in our opinion his criticisms of *rational constructivism* are not applicable to the form of market socialism we are analysing here.
9. See the opinions of Bettelheim and other authors mentioned in note 36 of Chapter 3.
10. Mill's idea certainly derives from Bentham's constructivism, that is, from the notion that laws and morals draw their validity and meaning merely from the will and intentions of those who designed them (see Hayek, 1988a, p. 52). But as the only notion that market socialism takes over from Cartesian rationalism or Benthamist constructivism is that distribution can be regulated by law, we do not think that Hayek's criticisms of the 'presumptuous rationalism' underlying socialism (see Hayek, 1988a, pp. 48–52) can be extended to cover market socialism as well. As for Hayek's criticism of Mill's idea, see Hayek (1988a, mainly Chapter 5 and pp. 92–3 and 117–19); Gray (1984, pp. 99–103).
11. Schumpeter also argued that 'the production and the "distribution" of the social product are but different aspects of one and the same process that affects both simultaneously' (see Schumpeter, 1942, p. 173), but he added that this is not applicable to a socialist order because capitalist and socialist economics are founded on different logical assumptions (ibid.).
12. The idea that distribution can to a large extent be determined independently of the production mode raises a serious problem discussed in detail in Chapter 12 further on. In the opinion of Alchian and Demsetz, 'if rewards were random, and without regard to productive effort, no incentive to productive effort would be provided by the organization' (see Alchian and Demsetz, 1972, p. 778), and from the perspective of economic theory pay rates that are fixed based on socio-political criteria can be equated with pay rates fixed 'at random'.
13. But recently, Roemer (1993) and Roemer and Silvestre (1993) argued in favour of the social ownership of production means on grounds of its compatibility with a more equitable distribution of income.
14. According to Keynes, an economic system in which the factors of production are rewarded by dividing up in agreed proportions the actual output of their cooperative effort is to be termed a 'barter economy' or 'cooperative economy' and opposed to an 'entrepreneurial' or capitalist economy (see Keynes, 1933, pp. 66–77). Keynes's distinction is thoroughly analysed in Rymes (1989, pp. 47–8).
15. According to Miller, also in a system with labour management income distribution must be regulated in the main (that is, with some suitable corrections) by the market mechanisms (see Miller, 1990, Chapter 6 and pp. 295–6), although he argues that in a system with labour-managed firms the market will tend to devise a much more equitable income distribution than that of capitalism (see Miller, 1993, pp. 304–12). This optimism

is shared by Vanek, according to whom 'democracy in the workplace always produces incomparably fairer distributions of income than do capitalist labor market forces' (Vanek, 1987, p. 14).

16. As for the manner in which income distribution has been regulated in the Mondragon complex, see for example, White (1991, pp. 89–92).
17. The problem of income distribution in a labour-managed system has received little attention so far. In a seminal paper, Sen (1966) has examined this problem in the case of a firm with a fixed number of members assumed to be equal in rank. He assumed that the income earned by each worker falls into two parts, a 'needs' income equal to a predetermined portion of the firm's net profit, and a 'work' income commensurate with the fraction of the firm's total workload that is assigned to the worker concerned. Bennett (1984) generalized Sen's model by extending it to the case of workers with different qualifications and propensities and by assuming that distribution was regulated by a benevolent manager trying to maximize a welfare function for the workers. As was to be expected, the manager finds him/herself confronted with a trade-off between distributional and efficiency aims. Subsequently the problem was further examined in Bennett (1988).
18. On the subjects dealt with in this paragraph, see, for example, Rosner and Putterman (1991) and Putterman (1993b, pp. 138–44).
19. According to some, the ideal of market socialism is to achieve egalitarian ends by reorganizing ownership rights (see Cohen and Rogers, 1993, p. 236). This is the central idea underlying Yunker's book on 'modernized' socialism (see Yunker, 1992, pp. 35–7). It is generally agreed that property is one of the main causes of inequality. In *Efficiency, Equality and the Ownership of Property*, for instance, Meade sets out by emphasizing the dramatic inequalities in the distribution of property that are observed in many advanced countries (see Meade, 1964, p. 27); and after a detailed analysis of the multifarious aspects of this issue, he concludes – with reference to a country such as Great Britain – that the only way to combine an efficient use of resources with an equitable distribution of income is to devise suitable measures for levelling the distribution of private property and increasing the net income from property under social control (see Meade, 1964, p. 75).
20. Durkheim is among those who deny that distributive justice is an essential element of socialism (see Durkheim, 1928, pp. 20–25).
21. The first theorem of welfare economics was clearly enunciated in Pigou (1928) and Bergson (1938), although it was not mathematically demonstrated until the early 1950s (see Arrow, 1951, and Debreu, 1951). Two valuable analyses of the first theorem of welfare economics are, among others, Sen (1975) and Beckerman (1989).
22. The growing importance of 'positional' goods further limits the validity of Pareto's theorems. By definition, what winners gain in positional competition is lost by those who are defeated (see Hirsch, 1977, p. 52) and many positional goods are not marketable; and this implies that, by its very nature, this kind of competition generates interdependencies outside the market.
23. One possible objection to this is that the role vested in the average elector in a genuinely democratic economic system would in itself be enough to redistribute income from the tail-ends to the centre, that is, against the interests both of the wealthy and of the poor (see, for example, Mueller, 1979, pp. 97 ff., and Estrin, 1991, pp. 356–8).

APPENDIX LABOUR MANAGEMENT AND ALIENATION*

As mentioned before, a major advantage of labour management is that it reduces alienation from work. In point of fact this complex issue would deserve much greater attention, but it is more the domain of philosophers than economists. Consequently we will confine our analysis to a brief discussion of Marx's concept of alienation. The issue raised here is: is it justified to say that worker management tends to eliminate or at least reduce alienation in Marx's understanding of the term?

Marx identifies different concepts of alienation, of which some are common to other forms of social organization, while others are specific to capitalism.[1] In very general terms, every form of production activity which is not an end in itself is alienated. Production is alienated when it tends to procure for the worker the wherewithal to be able to live or, broadly speaking, when it is conditioned by external needs, by the wish to procure whatever type of good. Marx wrote that, in societies whose experiences have been studied until the present, 'life activity, productive life itself appears to man only as a means for the satisfaction of a need, the need to preserve physical existence' (see Marx, 1844, p. 328).[2] The worker's job 'is therefore not the satisfaction of a need, but a mere means to satisfy needs outside itself' (see Marx, 1844, p. 326).

Another broad conceptualization is alienation caused by the market. On closer analysis, in fact, so long as scarcity exists, there must necessarily be either control or *exchange*, so that no non-conditioned choices will ever be made. This applies to the distribution of goods. Whenever these are not sufficient to satisfy the needs, they will have to be distributed either by the competent authorities, by democratically-made decisions (that is, by a majority vote) or else by exchange. But it also applies when allocating labour among several activities, because so long as production is not enough to meet everyone's needs, jobs must be assigned by the competent authorities either by means of competitive public examinations or by the exchange of labour against wages regulated by the market, out of free unconstrained choice. Thus, in this wider conception, work is alienated when it is performed with a view to earning a pre-established money reward.

There is no doubt that Marx defined work as being alienated when it is performed to secure an income. The above quotations show that this idea lies at the very root of his thought. For a worker, he writes, 'the meaning of his twelve-hour working day lies, not ... in weaving, spinning, drilling, etc., but only in earning the wages which allow him to eat, go out for a drink and have a bed to sleep in' (Marx, 1849, p. 34). In *Grundrisse* he also states, this time referring to a shopkeeper or a professional, that 'the exchange relation establishes itself as a power external to and independent of the producers'

(Marx, 1857–58, p. 146), and further on he argues (again on the subject of exchange relations): 'The social character of activity, as the social form of the product and the share of individuals in production, here appear as something alien and objective confronting the individual, not as their relation to one another, but as their subordinates to relations which subsist independently of them and which arise out of collisions between mutually indifferent individuals' (see Marx, 1857–58, p. 157).[3]

However, there is no doubt that Marx also had a narrower conception of alienated work, such as work dominated by capital. In his 1844 *Manuscripts* Marx states: 'the more the worker exerts himself in his work, the more powerful the alien, objective world becomes which he brings into being over against himself, the poorer he and his inner world become, and the less they belong to him'. 'The externalization (*Entäußerung*) of the worker in his production means not only that his labour becomes an object, an external existence, but that it exists outside him, independently of him and alien to him, and begins to confront him as an autonomous power; that the life which he has bestowed on the object confronts him as hostile and alien' (Marx, 1844, p. 72).[4]

Elsewhere Marx argues:

> It is not the worker that buys means of subsistence and production means; it is the means of subsistence that buy the worker. (Marx, 1863–66, p. 35)
> Means of production set themselves up vis-à-vis labour as the essence of capital and at this stage, as the predominance of past, dead work over present, living work. (Marx, 1863–66, p. 18)
> Consequently the material instruments for performing any work are alienated from the worker and, indeed, appear to him like puppets endowed with a will and a soul of their own. (Marx, 1863–66, p. 35)[5]

In the opinion of many authors the most important issue in Marx's later economic writings was the predominance of dead work over living work, the dependence of labour on capital, and the idea that a worker finds him/herself up against production instruments as before an outside force dominating him/her (see Elster, 1985, p. 102). Elster wrote:

> The alienation of the worker from the commodities he has created is closely connected with his spiritual alienation. The production of commodities is linked to the creation of a need for them – a need which is often frustrated in the world of capitalist production. If this link is sufficiently evident, the reason why a worker should feel frustrated because production means are alienated from him is certainly less apparent, as it can barely been maintained that he needs them in any way. This form of alienation is indeed, at first sight, less obvious, although it has deeper implications. The alienation of production means is the crucial structural condition which bears out the manner in which commodities are alienated, because it deprives the worker of his claim to the whole net product. Consequently, being dispossessed of the production means, the worker is prevented from exercising full control over the work process and thus from fully displaying his creative faculties. (Elster, 1985, p. 103)

If, as Marx says, 'it is clear that capital presupposes that labour is wage-labour' (Marx, 1894, p. 963), then labour management – which eliminates work in exchange for wages and the predominance of dead work over living work – will necessarily do away with such alienation as stems from the dominion of capital over labour.[6] As stated previously, labour management reverses the capital–work relation because it is the workers who purchase the production means and not the other way round, and consequently it does away with the alienation which is caused by the subordination of labour to capital.[7]

Furthermore, as mentioned in Section 8 above, the division of labour would be less accentuated in a labour-managed system and this, too, would tend to reduce alienation.

But there is more than that, because the peculiarity of the labour-managed firm is not only the fact that in it labour controls capital and not vice versa, but that decision-making within the firm lies exclusively with the members (and with all the members) of the firm (in line with Sertel's definition of the labour-managed firm which is reported in Section 1 of Chapter 8). In a labour-managed economy firms are democratically managed because only the members have a say in decision-making and no decisions whatsoever are imposed on them from outside; and this reduces alienation. As has been observed, 'Freedom from external controls is important because it is felt that if worker alienation is to be eliminated an absolutely crucial requirement is the restriction of decision-making authority in the firm to the *current members* of the collective' (see Furubotn, 1979, p. 17; emphasis in the original).

NOTES

* This appendix contains some observations that are already published in Jossa (1994a).

1. The capital–labour relationship, he argues in *Grundrisse*, is 'the most extreme form of alienation' (Marx, 1857–58, vol. II, p. 515).
2. This and other quotes from the *Manuscripts* contradict the thesis of Althusser and others that the concept of alienation is found only in Marx's earliest works (when, according to Althusser, Marx was still influenced by Hegelian philosophy), and not also in his later work (see Althusser, 1965, pp. 213–14). Recently, the idea that the problem of alienation runs throughout Marx's whole work and that many of his later arguments fully fit within the alienation theory expounded in the *Manuscripts* was convincingly propounded by Elster (see Elster, 1985).
3. In his 1844 *Manuscripts* Marx wrote: 'the division of labour is nothing more than the estranged, alienated positing of human activity as a real species-activity or as the activity

of man as a species-being' (Marx, 1844, p. 143); and further on: 'The consideration of the division of labour and exchange is of the highest interest, because they are the perceptibly alienated expressions of human activity and essential powers as species-activity and species-powers' (Marx, 1844, p. 374).
4. Elster's comment on this passage from Marx was: 'when considered as an argument ... it is a series of *non sequiturs*' (Elster, 1985, p. 102).
5. After quoting this passage, Bedeschi writes: 'now this process, *which is nothing other than alienation*, is the objective, real foundation of the illusions of economists, of their fetishistic conscience' (see Bedeschi, 1972, p. 123; emphasis added).
6. In a monographic study on the theory of alienation, Mészàros equates the Marxist concept of alienated work with the concept of work in exchange for wages (see Mészàros, 1970, pp. 152–3).
7. See the thorough analysis of this issue contained in Reich and Devine (1981).

7. An introduction to the theory of the labour-managed firm*

> The economics of co-operative agreements are an important field of research to a theoretician. These agreements may constitute major elements in the struggle for existence. The respect for life in Schweitzer's interpretation, i.e. as respect for ants and flowers, might be an obstacle to the Darwinian struggle for existence. But a culture founded on unselfishness – where men do not behave like atomistic rivals and are linked, by tradition or law, by social contracts which are binding on them – may have a great potential in terms of survival or expansion. (Samuelson)

7.1 STATISM AND SOCIALISM

In the light of the reflections set forth in the previous chapters we may argue that the current equation of socialism with statism would appear to stem from the widespread conviction that capitalism and market are the two facets of one and the same coin; more precisely, from the thesis that 'capitalism is inherent in the very chromosomes of the market: that is, that the market is capitalism potentially'.[1] Indeed, if the market is the very soul of capitalism, to stress its malfunctions and injustice and suggest state intervention as a remedy is tantamount to proposing statism both as a remedy and as an alternative option to capitalism. While, admittedly, plan and market must necessarily coexist within a modern economic system, whenever the market is equated with capitalism and state intervention with socialism, a system will be all the more distinctively socialist the more state intervention it provides.

As for Marx, he equated socialist revolution with the reversal of the capital–labour relation – a result which a statist system can hardly be assumed to bring about.

According to him capital is the economic power that dominates everything in the bourgeois society. He argued that 'As long as production resting on capital is the necessary, hence the fittest form for the development of the force of social production, the movement of individuals within the pure condition of capital appears as their freedom' (see Marx, 1857-58, p. 650), but on closer analysis individuals are seen to live in a condition of serfdom, because in capitalism 'free competition is the relation of capital to itself as another capital... it is the free development of its conditions and of itself as the process which constantly reproduces these conditions. *It is not individuals who are set free by free competition: it is, rather, capital which is set free*' (see Marx, 1857–58, p. 650; emphasis added).

Nevertheless the predominance of capital over labour may ultimately be said to stem from the capitalist, rather than the mercantile, nature of production activity. In order to restore the control of labour over production means it would be enough to grant workers the right to decide on production activity without abolishing the market and thus to establish a system of self-employed producers; and there are solid grounds for contending that, while statism perpetuates the employment relation without reversing the capital–labour relation, the latter objective is fully achieved in a labour-managed economy.

7.2 THE REVERSAL OF THE CAPITAL–LABOUR RELATION IN A LABOUR-MANAGED ECONOMY

As mentioned before, a labour-managed system is a market system in which firms are run by those who work in them. According to many theorists, in such an economic order workers would simply become the 'usufructuaries' of the firm's production means: in exchange for the use of capital goods they would have to pay the owners rentals proportional to the value of the production means they would be assigned for use;[2] according to others, in a system with labour-managed firms workers should not only manage the firms, but even own them. Be that as it may, as every firm requires a hierarchy of some sort,[3] it seems reasonable to assume that a labour-managed economy would have to provide for democratic elections in firms, that is to allow workers to choose their managers and to replace them in case of need. There is widespread agreement that managers would have to be elected from among the workers of the firm itself and that their functions would have to be fixed either in general by law or in the articles of association of firms or approved from time to time in workers' meetings in line with the principle that managers must always act in the interests of workers.[4]

When labour management is established throughout a country, the capital–labour relation is reversed both in single firms and in society as a whole. In its purest form, that is, when workers simply become 'usufructuaries' of the firm's capital goods, labour management is a system in which the workers of the firm borrow and manage *third party* capital: as a result, it is no longer capital that hires the workforce, but the workforce that assumes capital and pays interest on it.[5] Under capitalism, income from employment is pre-fixed while employers appropriate returns on capital as 'residual claims'; in a system with labour-managed firms, instead, it is return on capital (that is, interest or profit) that is pre-fixed, whereas income from employment is commensurate with the 'residual' (that is, the difference between the revenues earned by a firm from the sale of its output and the production costs it has incurred).[6] In other words, when workers 'become their own capitalists' (Marx, 1894, p. 571), it is income from labour that becomes variable (because it increases in proportion to the firm's performance), while return on capital is either negotiated from time to time or fixed by the responsible government authority in such a way as to make it independent of the immediate results of economic activity. In this way the respective roles of capital and labour are reversed[7] and business initiative rests with the workers.[8]

As will be argued further on, this means that a system with labour-managed firms rules out the exploitation of workers by capital although it retains returns on capital.

While there is no denying that a labour-managed economic system retains a class of people who earn interest on capital, capitalists are no longer the dominating class, because they are deprived of their control over firms; and if it holds true that 'capital is the economic power of the bourgeois class that dominates everything', the social organization of a system with labour-managed firms is, by definition, a non-capitalist one.

As mentioned before, however, labour management may be achieved not only by leaving capital in the hands of private individuals, but also by nationalizing production means or by granting firms group capital[9] – in which case workers become the legal owners of the capital accumulated in their firms.[10] And it has likewise been emphasized that a labour-managed economy is in any case a market system founded on the logic of competition, so that there is no risk that statism will surface again and wipe out all traces of pluralism.

Thus the distinctive feature of labour management is not statism, but the reversal of the capital–labour relation, which is in turn the result of a true socialist revolution not accompanied by the abolition of the market. And once the capital–labour relation is reversed, labour will reappropriate production means and production will again be subjected to control.

As pointed out before, this means that while retaining the market, a labour-managed economy will at least do away with one of the causes behind alienation at work (see the appendix in the previous chapter).

In point of fact the experience in Yugoslavia during the years 1965–74 seems to suggest that the reversal of the capital–labour relation will not always result in a greater role of workers in the management of their firms (see, for example, Horvat, 1976, pp. 156 ff. and Stephen, 1984, Chapter V), but while this is certainly a serious objection to the adoption of labour management, instead of undermining the validity of our proposal it simply induces us to insist on the need – for a country wishing to adopt labour management – to work out a well thought-out system of institutions capable of guaranteeing maximum worker participation in the management of firms without encroaching upon the efficiency objective.

7.3 THE GENERAL PRINCIPLE OF BEHAVIOUR IN LABOUR-MANAGED FIRMS

In a well-known article which appeared in 1898, Maffeo Pantaleoni wrote: 'Both consumers' and producers' co-operatives are *economic* institutions'; and as any other economic institutions 'they aim to achieve purely economic objectives through economic procedures, that is, they are organizations which tend to produce commodities at a lower cost than would otherwise be possible using other means and to conduct business for the benefit of their members'. But this means that 'the motive force behind their establishment and management is *egotism*; and that the drive of which they are the expression is *private interest*' (see Pantaleoni, 1898, pp. 132–3; emphasis in the original).

Without deliberating any further, from these general reflections Pantaleoni deduced that all the characteristics usually ascribed to cooperatives are in fact common to every kind of firm. If it holds true that all the members of a co-operative act in self-interest without pursuing any further or higher objective and that 'people invariably conduct business exclusively in their private interests', it follows that 'there is no single trait exclusively specific to cooperatives' and that 'if the principles supposedly specific to cooperatives were consistently applied on a universal basis, they would produce exactly the same results, that is, the same commodities pricing system that emerges in a competitive system not founded on the so-called co-operative principles' (see Pantaleoni, 1898, p. 142).

To back up this inference, Pantaleoni examined a number of principles and characteristics which up to then had been held to be specific to cooperative firms and concluded that the prerequisite for putting into action cooperative principles is the existence of firms not organized along cooperative lines or that the supposed diversities of cooperatives are, on closer analysis, nothing but traits common to all profit-making institutions and that the rationale of the cooperative is in no way 'an autonomous principle' (see Pantaleoni, 1898, p. 145).

However, Pantaleoni failed to make it clear whether the rationale of the cooperative he was discussing was to be interpreted as a principle of behaviour or an organizational rule; and this is admittedly confusing. He maintained, for instance, that the collective exercise of functions was not a distinctive trait of cooperatives, because every business organization, regardless of its legal form or corporate object, is always a union of economic forces, a group of individuals who conduct business jointly, though only in their own interest, when pursuing whatever economic functions they may have envisaged in their corporate objects. Is it not true, he wondered, that limited companies conduct business collectively only to the benefit of all their shareholders? As for the

> principle providing that all work is to be exclusively done *by the members, with the members and for the members*, this is a merely practical rule which, if generalized or universalized, would become absurd or produce effects so far not fully appraised by members of cooperatives. It is a practical rule because it is enforceable only when satisfying the elementary needs of highly simple people, while in different situations it will conflict with the principle of an effective division of labour and end up by reducing output and, consequently, the degree to which needs will be met. (Pantaleoni, 1898, p. 147; emphasis in the original)

In opposition to Pantaleoni's contentions, however, in an article published in 1958 the American economist Benjamin Ward argued that while capitalist firms tend to maximize total profit (or the profit rate), cooperatives tend to maximize average income per worker. This opened up an entirely new field for economic research, that is, the economic theory of producer cooperatives viewed as firms maximizing the average income of those working in them. As the contributions to this new research field are by now numerous, there certainly are grounds for stating that alongside the traditional theory of the (capitalist) firm based on the assumption of profit maximization, there is also the theory of the cooperative (or labour-managed) firm aiming to maximize the average income of its members.

Thus Pantaleoni's criticisms have lost momentum without ever being openly refuted. The cooperative firm differs from the capitalist firm because it is based on a general principle of behaviour which is different from profit maximization.[11]

7.4 FURTHER OBSERVATIONS ON INCOME DISTRIBUTION IN A LABOUR-MANAGED ECONOMIC SYSTEM

An important point to be clarified when discussing the overall aspects of a labour-managed economy is whether it is possible to devise a general rule which may effectively govern the distribution of income among workers. It is apparent that a system which offers the advantage of abolishing class divisions will function only if income is distributed based on rules minimizing the conflict between different categories of workers. When we dealt with this problem in Chapter 6, we concluded that the best way to organize income distribution in the economic system outlined in this book is to divide workers into several categories and to assign each of these a 'coefficient' in order to enable each worker to know, even *before* starting work, what *share* of the firm's income he/she will be entitled to based on the category he/she belongs to.

It has likewise been mentioned that by virtue of this overall distribution rule the aggregate income to be distributed among all the members of the firm would vary in size, while the income earned by each worker would be a fixed proportion of the variable aggregate amount to be distributed.

But the most radical conclusion of Pantaleoni's criticism was that 'as co-operation has no principle of its own to govern the distribution of income, whatever its principle, it will affect the factors of production in such a way as to re-establish an economic equilibrium' similar to that prevailing in the capitalist market (see Pantaleoni, 1898, p. 129); which means that, 'if production and marketing were entirely conducted by co-operative firms, one would obtain the same values that emerge in a free-competition system' (ibid.). Here the central idea is that each individual 'will remain with the firm as long as he deems it convenient to do so and will leave the firm as soon as he stops getting enough out of it' (see Pantaleoni, 1898, p. 135). By virtue of this, Pantaleoni contended, both in cooperative and capitalist firms 'production would always be increased up to the level at which the last increase of every factor of production will barely yield the expenses incurred in connection with it, that is, the level at which the marginal productivity of that factor equals the ratio of the price of the factor to the price of the commodity produced'; it follows, therefore, that 'a cooperative distribution principle will never bring about the miracle of enabling the holders of factors of production, for instance workers, to earn more than their wages' (Pantaleoni, 1898, p. 169).

The merit of Pantaleoni's criticism lies in his intuition that the principles of marginal analysis must be applied in the same way both to capitalist firms and to cooperatives. But this great Italian economist failed to see that in a classless society the marginal productivity of labour will no longer equal wages but the average income of labour, and that the latter, as will be clarified further on, can be interpreted as the *aggregate* of wages and *profits*. Consequently there are grounds for arguing that the earnings of cooperative members would not exceed those of workers employed in capitalist firms only when profits are equal to nought, that is, only in situations of long-run perfect competitive equilibrium. As is well known, however, long-run perfect competitive equilibrium is well nigh impossible in practice.

As mentioned before, Pantaleoni's whole analysis is based on the assumption that the motive force that infuses life into the cooperative and governs its functioning is 'self-interest'; and it is from this simple assumption that he derives all his arguments and criticisms. But today none of those who have thoroughly inquired into this matter are inclined to refute this assumption. It is not because it denies the application of the 'profit principle' to cooperatives

that Ward's approach appears novel, but because it throws light on a principle which is both a rule of conduct and an organizational principle (which greatly affects the behaviour of members of cooperatives): the principle that – as a result of the 'rules of the game' *typical of the cooperative production mode* – any increase in the revenue earned by the efforts, creativity and organizational abilities of one or more members is distributed among *all* the members of the firm (which has earned such revenue). And this fundamental organizational principle, which – let us repeat – is inherent in the very nature of cooperation, determines that each member of a cooperative, whether selfish or altruistic and irrespective of his/her motives, is perfectly aware that his/her actions will directly and significantly affect the rest of the members: as long as the members continue to work for the cooperative, none of them may contrive his/her personal advantage without simultaneously working to the benefit of the rest of the members.

Nothing of the kind is found to occur in capitalist firms, in which the exertions of workers particularly committed to their jobs merely add to the profits of their employers and where, as everyone knows, there is a constant conflict of interests between workers and capitalists.

7.5 THE ISSUE OF MOTIVATION IN ECONOMIC ACTIVITY

A number of criticisms might be made against the proposal for labour management due to the fact that in an economic system grounded on the market and on free initiative any business activity will tend towards organizational modes which – regardless of their definition – will reflect those of capitalism ever more closely (see Sweezy, 1968, p. 3). According to Sweezy, to argue that a society allowing free play to the market turns into a socialist order when production means are state owned means mistaking legal relationships for the actual relations of production, because 'when firms are controlled by small groups aiming to maximize profits by producing goods for the market, production and class relations are basically those of a capitalist society' (ibid.).

Thus Sweezy's criticism raises the problem of deciding if the substitution of per capita income maximization for profit maximization (as the general principle of economic behaviour in labour-managed firms) is merely a play on words or could in fact bring about a radically different social organization from that of capitalism.

According to a well-known current of thought which finds its most illustrious representative in Adam Smith, 'acquisitiveness is a force which Providence has planted in our nature' and 'its fruits accrue to the benefit of all, if only we let it move without hindrance', because 'whenever someone increases his income, all benefit' as a result of the fact that no one can increase his/her income without offering his/her fellow-beings better and cheaper services than his/her competitors do (see Myrdal, 1943, pp. 44–5). According to others, in particular Bernard Mandeville (who has stressed the absurdity of the ideal and harmonious world theorized by liberalist thinkers), 'acquisitiveness has its roots in such immoral qualities as the desire for power, ambition, the love of luxury, etc.' (Myrdal, 1943, p. 45). In other words, while in the minds of the followers of Smith what individuals do in their self-interest 'tends to be presented, in itself, as virtuous' (see Colletti, 1970b, p. 288), according to the opposite current of thought economics and ethics will never be in agreement and private interest, far from being reconciled with public interest, contradicts it to the extent that 'no one can pursue his own advantage or satisfy his interests and passions without doing harm or causing ruin to others' (see Colletti, 1970b, p. 291). This is the reason why a social order based on the pursuit of self-interest is the most antisocial and irrational conceivable (see Owen, 1816, p. 232).

The sharp opposition between these two visions is associated with (and said to reflect) the liberalism-versus-socialism opposition and the conflict between those who see capitalism as a 'harmonious' social order and those who contend that the world in which we live is grounded in a conflict of interests between two opposed classes, that progress is achieved through exploitation and that wealth and welfare are created to the benefit of some while being based on the misery of many. None the less, when these visions are formulated as they have been above, they both end up by misrepresenting reality, because to contend that 'whenever someone increases his income, all benefit' is certainly not true. As Keynes wrote (1931, pp. 287–8): 'the world is *not* so governed from above that private and social interest always coincide' (emphasis in the original). Yet it is equally untrue to say that 'no one can pursue his own advantage or satisfy his interests and passions without doing harm or causing ruin to others'. As is suggested by Mandeville's paradox on 'private vices' becoming 'public virtues' (and as even people with only a superficial grounding in economics know quite well), if everyone pursues his/her own private interest in the world in which we live society as a whole will doubtlessly experience growth.

The most radical arguments for and against economic liberalism derive in the main from general and 'metaphysical' principles. This is why it seems convenient to take Keynes's advice and to carry our discussion one step forward by taking 'from the ground the metaphysical or general principles upon which, from time to time, laissez-faire has been founded' (ibid.).

7.6 MOTIVATION IN A LABOUR-MANAGED ECONOMY

Addressing the capitalism-versus-socialism issue, Keynes argued that 'until the ambit of men's altruism grows wider' nothing will prevent society from appealing to the innermost desire of individuals to make money as the main driving force behind the economic machine, for 'capitalism, wisely managed, can probably be made more efficient for attaining economic ends than any alternative system yet in sight' (Keynes, 1931, pp. 288 and 294). On the contrary, what we, for our part, are setting out to emphasize here is that socialism will prove practicable despite society's continued reliance 'upon an intense appeal to the money-making and money-loving instincts of individuals as the main motive force of the economic machine' (Keynes, 1931, p. 293), because in a labour-managed economy the 'ambit of men's altruism' can be expanded, not through any educational effort, but through the very nature of the system itself.

Let us stress again that in a labour-managed economy economic activity is guided by *average* worker income maximization, not profit maximization, because the aforementioned general rule of distribution implies that those trying to add to their income through their work will necessarily maximize the firm's revenues. By working harder and better, they will not only add to their own income, but simultaneously increase the earnings of *all* those who work in the firm and earn shares of its profits. And if this holds true, there are grounds for believing that when production activity is organized along cooperative lines the workers of each single firm, though guided by their egotistical interests, will easily acquire a solidaristic conscience and thus expand the 'ambit of men's altruism'.

The materialistic conception of history holds that 'the mode of production of material life conditions the general process of social, political and intellectual life' (Marx, 1859, pp. 20–21) because 'by producing men are indirectly producing their actual material life' (Marx and Engels, 1845–46, p. 42); and 'as individuals express their life so they are'; 'what they are, therefore, coincides with their production, both with what they produce and with how they produce' (ibid.). Those who share this view may consequently argue that a labour-managed economy will expand 'the ambit of men's altruism' and make people less selfish because the workers of a firm will all share the same lot and organize their production activity in such a way that they will jointly benefit from the efforts with which every one of them endeavours to boost his/her income.[12]

Admittedly, labour management will not prevent certain conflicts of interests from arising even within single firms and there will be sharp competition among different firms. But our aim, here, is simply to point out that while the overall motive behind capitalist economic activity is private utility, in a socialist system with labour-managed firms all maximum income calculations will usually be made to the benefit of the whole group.

To tell the truth, when labour management was put into practice in Yugoslavia in the 1970s and 1980s, it failed to appreciably change worker motivation in the direction anticipated by us. None the less those inclined to emphasize the relevance of the Yugoslav experience in this field (in spite of strong grounds for thinking otherwise) hold that this argument, far from refuting the validity of our line of reasoning, should only discourage too rosy predictions about the advantages of labour management.

This subject will be analysed in greater detail in Chapter 13.

7.7 THE SEPARATION OF OWNERSHIP FROM CONTROL IN FIRMS

The proposal for labour management again raises the issue of separating ownership from control in business enterprises, a problem which is closely associated with the issue of motivating economic activity.

The capitalist entrepreneur is often said to perform a dual function, because at times he/she acts as a 'functionary of production' and at times as the 'master', that is, as the owner of production means. Viewed as the functionary or agent of production, by guaranteeing capital accumulation he/she actually performs a function 'in the service' of the production process and his/her work (that is, the active role he/she plays in the production process), though of a very peculiar kind, may justify the share of the income of a firm which he/she appropriates. Viewed as owner of the firm, he/she has basically no duties but only rights; he/she provides no services to the community but can freely dispose of the firm and appropriate its whole earnings owing to the mere fact that the ownership title to the firm's production means entitles him/her to 'exploit' those working for the firm. If this holds true, however, there are grounds for maintaining that 'a single, though basic element of the ancient social structure' (feudalism) 'still survives within bourgeois society with its capitalist production mode' (Napoleoni, 1985, p. 135). And one may also contend that 'the *modern* entrepreneur seems to have evolved around an *ancient* core which is still substantially intact': the ownership title to production means, that is, the title, not based on work, by virtue of which he/she appropriates a portion of the social product (see Montebugnoli, 1985, pp. 40–41; emphasis in the original).

The links between the concept of exploitation and this notion of the entrepreneur will be analysed in greater detail further on, but the above reflections prompt the need to investigate difficulties which are likely to arise

if the entrepreneur is deprived of his/her status as 'master' while continuing to perform his/her function as a functionary of production.

According to Marx:

> Capitalist production has itself brought it about that the work of supervision is readily available, quite independent of the ownership of capital. It has therefore become superfluous for this work of supervision to be performed by the capitalist. A musical conductor need in no way be the owner of the instruments in his orchestra. ... Cooperative factories provide the proof that the capitalist has become just as superfluous as a functionary in production as he himself, from his superior vantage-point, finds the large landlord. (Marx, 1894, p. 511)[13]

The above quotation and a number of additional well-known passages on joint-stock companies (see Marx, 1894, p. 512) may show that in Marx's opinion the separation of ownership from control was not only practicable, but already under way in capitalism as a matter of course. This idea was widely circulated especially after the publication of Berle and Means's book on *The Modern Corporation and Private Property* in 1932. As a result, we are somewhat surprised by Napoleoni's contention that traditional Marxist thought views the entrepreneur-owner nexus as inseparable and that a society which is no longer capitalistic but still mercantile in nature cannot sever this nexus without severe prejudice to capital accumulation (see Napoleoni, 1985).[14] Irrespective of whether this is true or not, this argument is none the less justified in the light of a real problem and therefore anything but ungrounded. To gauge its validity, we will thus have to ascertain whether in a labour-managed system with socially-owned production means the separation of ownership from control will actually hinder the accumulation of capital and, consequently, the efficiency of enterprises.

These problems will be dealt with extensively in Chapters 10 and 12.

7.8 COOPERATION AND ECONOMIC CRISIS IN KEYNESIAN THEORY

At this point it is worth analysing a Keynesian argument for labour management, according to which an economic system with labour-managed firms would always produce full-employment equilibrium.

From the 1933 version of the *General Theory* we can infer that the firm Keynes used to term 'co-operative' is one in which 'the factors of production are rewarded by dividing up in agreed proportions the actual output of their co-operative effort'; and according to Keynes, whenever this is the case, nothing will prevent a firm from employing workers as long as the marginal productivity of labour exceeds its marginal disutility (because 'the presuppositions of the classic theory are fulfilled' (see Keynes, 1933, p. 77). In other words, in Keynes's view 'The Classical Economics presupposes that the factors of production desire and receive as the reward of their efforts nothing but a predeterminate share of the aggregate output of all kinds' (see Keynes, 1933, p. 76) and the economic order he termed as 'co-operative' is precisely the simplest example of a society in which the assumptions of classical theory are met or, more precisely, the case of a social system in which the second postulate of classical theory is valid (see Keynes, 1933, pp. 78 and 101). But in Section 7 of Chapter 6 we defined an economic system with labour-managed firms as an economy in which the factors of production are rewarded by dividing up in agreed proportions the actual output of their cooperative effort. So the problem is as follows: is it possible to use this Keynesian argument to back up the contention that in a labour-managed economy equilibrium is always with full employment?

Keynes also wrote: 'From the time of Ricardo the classical economists have taught that supply creates its own demand'; 'which is taken to mean... that aggregate effective demand is constant' (see Keynes, 1933, p. 80); and this is precisely what happens 'in a co-operative or in a neutral economy, in which sales proceeds exceed variable cost by a determinate amount' and where '*effective demand cannot fluctuate*' (see ibid., emphasis added). This means that the characteristics Keynes ascribes to a cooperative economy are the validity of Say's law, the absence of fluctuations in aggregate demand and no influence of aggregate demand on employment.[15]

The idea that an economy defined as 'cooperative' is governed by Say's law of markets also led Keynes to say that 'the distinction between a co-operative economy and an entrepreneur economy bears some relation to a pregnant observation made by Karl Marx': the observation that 'the nature of production in the actual world is not, as economists seem often to suppose, a case of C–M–C', that is, of exchanging commodity (or effort) for money, in order to obtain another commodity or effort', but a case of M–C–M', that is, exchanging commodities for money in order to obtain more money (see Keynes, 1933, p. 81). Thus it was also by means of this line of reasoning that Keynes came to propound that crises from excess production are specific to a capitalist economy because of its M–C–M' production mode, while they are actually impossible in a society in which the production mode is a case of C–M–C' – as happens in a barter economy or an economy of the type he termed 'co-operative'.[16]

It is worth mentioning that these quotations have been taken from a version of the *General Theory* which was strongly influenced by Dennis Robertson,[17] but were neither included in the final version of his book nor published elsewhere. Thus it is possible to assume that in due time Keynes changed his mind about the ideas expressed in them. But here we are not discussing the evolution of Keynes's thought, but simply trying to clarify whether the above quotations are, or are not, acceptable.

7.9 ARE ECONOMIC CRISES POSSIBLE IN A LABOUR-MANAGED ECONOMY?

As the labour-managed firm is a business enterprise operating within a market economy, it is impossible to contend that the nature of production in a cooperative economy is a case of C–M–C' and that crises are impossible precisely for this reason. In other words, in a labour-managed economy each worker becomes an entrepreneur and, as such, he/she will be 'interested, not in the amount of product, but in the amount of *money* which will fall to his share' – as is the capitalist entrepreneur according to Keynes (see Keynes, 1933, p. 82; emphasis in the original). Intuitively, therefore, this would not seem to justify the assumption that crises are out of the question in a labour-managed economy. But is it possible to reach safer conclusions on this point?

In our opinion a number of simple and highly general considerations may help us demonstrate that fluctuations in effective demand and economic crises are possible in labour-managed economies. As will be shown in detail further on, the relevant literature contains a number of precise rules for deciding when it is convenient for a producers' cooperative to make investments; and the conclusion reached is that investment decisions in a labour-managed economy do not substantially differ from those made in a capitalist economy. Why, then, should effective demand be constant in economies which we term cooperative? In labour-managed societies investment decisions are governed by the principle of per capita income maximization and are strongly affected by the forecasts of decision-makers about the future trends and cycles of the economy. Consequently the multiplier theory and Keynesian theory can be applied to it in much the same manner as to capitalism[18] and there would not seem to be any ground for assuming that effective demand should not fluctuate and that crises should be impossible.

Yet, even though effective demand does indeed fluctuate, it is right to say, as Keynes does, that involuntary unemployment is impossible in a labour-managed economy provided that workers are free to decide on employment levels and hours of work. In a system with labour-managed firms workers are autonomous and there is no labour market proper: and this means that employment levels and working hours are determined by the utility calculations of workers both when they are already members of a firm and when they are not.[19] And in this case, as Keynes wrote: 'there is no obstacle in the way of the employment of an additional unit of labor if this unit will add to the social product output expected to have an exchange value ... which is sufficient to balance the disutility of the additional employment' (see Keynes, 1933, p. 78). This certainly holds true with respect to workers who are already members of a firm and who are thus in a position to freely fix both its employment level and the length of their working day; but it also applies to those still unemployed, because at least in the case where existing capital goods are freely offered in the market to the highest bidder (for him/her to take them over as usufructuary or owner, depending on the system chosen) in line with the rationale of the system (see Ireland and Law, 1982, p. 14), those who deem it convenient to start business by assuming capital are free to do so: and in such a case it is natural to assume that single individuals will decide to start work whenever they predict that the utility of the income they will gain will exceed the disutility of their work and will always be in a position to put their plans into practice.[20]

The conclusion must consequently be that while fluctuating investment levels do occur in labour-managed systems as well, they do not result in *involuntary* unemployment.[21] In a labour-managed system fluctuations in aggregate demand cause changes in price levels, but the level of employment will always be the one at which the utility of the income from the last hour of work balances the marginal disutility of the work, so that 'the presuppositions of the classic theory are fulfilled'.[22]

Furthermore it is reasonable to assume that in a labour-managed system economic crises will be less accentuated than in capitalism. As we know, income from work fluctuates in a labour-managed economy and any fall in demand reduces the income levels of workers (as crises in capitalism result in lower profits). But while profit margins (*mark-up*) are known to be rigid in capitalist systems, there are no grounds for assuming that income from labour will be equally rigid in a labour-managed economy. This seems to be a strong argument in favour of the assumption that in the latter income from labour will act as a buffer of some sort and will attenuate economic crises; but this problem lies outside the scope of our analysis.

A different case in point is a system of capitalist firms which adopt profit-sharing schemes. According to Weitzman, such a system guarantees permanent full employment (see Weitzman, 1983 and 1985); but this extraordinary characteristic of the system studied by Weitzman (which economists have not yet sufficiently explored and put to the test)[23] stems, not from the absence of fluctuations in demand typical of all market systems, but from the fact (which at first sight strikes us as somewhat surprising) that in profit-sharing firms equilibrium results from permanent excess demand for labour[24] and therefore from the existence, here too, of a sort of 'buffer' preventing fluctuations in aggregate demand from affecting employment levels or at least being fully reflected in employment.

7.10 LABOUR MANAGEMENT AND EXPLOITATION

The last – and equally very general – point to be discussed here is if exploitation is possible in a labour-managed economy. The problem is far from unimportant, since the persistence of capital gains and private savings in a labour-managed economy might induce us to think that labour would continue to be exploited.

In connection with this it is worth mentioning that those who reject the labour theory of value will have only a vague and essentially ethics-based notion of exploitation. This seems to be the case of Garegnani, who bases his arguments on both an analytical component and a value judgement.

The component of exploitation Garegnani describes as purely *analytical* is his contention that profit and rent are merely based on the 'circumstance that the existing economic order prevents the working class from appropriating the whole social product' (Garegnani, 1981, pp. 87–8); and the reason why it cannot be precisely 'demonstrated' is that it can only be accounted for 'within the whole context of economic theory' (see Garegnani, 1984, p. 8) or rather that it coincides with the whole of economic theory (see ibid.). The inherent value judgement is a moral feeling which will induce many people to assume the existence of exploitation even when profit is justified only at the institutional level (see ibid.).

On what grounds does Garegnani argue that the 'complex of economic theory' shows that profit and rent arise from 'the simple circumstance that the existing economic order prevents the working class from appropriating the whole social product'?[25]

In highly simplified terms, many of those we term Neo-Ricardians are used to approaching the issue of exploitation as follows. In neo-classical theories profit is said to stem directly from exchange; it is the price paid for using savings or capital and, just like every other price, it results from the meeting of demand and supply, that is, from the equilibrium of savings and investments or demand for and supply of capital goods. But if profit stems directly from exchange, exploitation is out of the question. As demand for a good arises if and to the extent this is of any use, a person acquiring a commodity of his/her free will and without being misled or cheated can hardly be said to be exploited (in the absence of a sound theory to the contrary). None the less Neo-Ricardians contend that in capitalism profit is appropriated by the owners of capital not because they exchange savings and the services of capital or capital goods against anything whatsoever, but simply because the ownership titles to capital goods generate income in favour of their holders by their very nature (see Nell, 1967); and they also maintain that profit is a surplus or 'residual claim', that is, something which is left over when exchanges have been accomplished and something which is no doubt compatible with, but does not directly originate from, exchange.

All these arguments concerning exploitation are not convincing even when they are applied to a capitalist economy (and they would in any case require much further discussion).[26] But what about a labour-managed economy?

It seems clear that even those who accept the above-mentioned approach will agree that exploitation is made impossible by the very nature of a labour-managed economy. As pointed out before, in a labour-managed economy the capital–labour relation is reversed: capital is prevented from appropriating the 'surplus' or 'residual' earned, while labour is granted the whole earnings of the firm net of taxes and interest paid on capital; and if savings remain privately owned, the interest rate will be determined by the market and will be an exchange in which, regardless of the theory of interest that is accepted, those who make a purchase will obtain something in exchange for something else.

And this is why the same arguments on which advocates of surplus theory base their contention that capitalism entails exploitation should be used to rule out exploitation in a labour-managed economy in spite of the fact that savings remain privately owned.[27]

NOTES

* This chapter is a revised version of pages already published in Jossa (1985 and 1989b).

1. See Ruffolo (1977, p. 84).
2. This is the form of labour management that Vanek advocated in many of his writings (see, above all, Vanek 1971a and 1971b).
3. See, for example, Simon (1971) and Williamson (1975); also see, however, Baccianini and Tartarini (1969, pp. 66 ff.); Braverman (1974, pp. 16–17 note); and Pagano (1978, pp. 136 ff.).
4. Even an advocate of labour management can share the view of those who maintain that the conflicts of interests between management and labour which arise in firms (in any firms operating in the market) are conflicts not between different classes but between different functional positions and, as such, can never be solved (see, for example, Macchioro, 1946, p. 674).
5. In the labour-managed firm which borrows capital, Vanek wrote, 'capital is assimilated to any other non human factor of production' and 'this is very important, as it should be. Just as under capitalism labor was degraded to the position of other productive factors, under a participatory economy capital ought to be put on the same level with all other non labour factors of production. The only difference is that the latter solution is correct, desirable, and moral because capital is as physical and inanimate as raw materials, fuels, and other inputs in production', while the former solution degrades human beings to the position of inanimate objects (see Vanek, 1971a, p. 176).
6. An obvious observation here is that the interpretation of income from labour as 'residual' seems to arise from surplus analysis, while current labour management theory is still neo-classical throughout (for an early, though superficial analysis of this issue from a Ricardian perspective, see Liechtenstein, 1984 and 1988).

7. As was already pointed out by the Ricardian socialist Thompson, in a cooperative industrial system 'all the workers become capitalists' (see Thompson, 1827, pp. 4–5).
8. According to Dubravcic, in an economy with labour-managed firms labour becomes 'an entrepreneurial input' (see Dubravcic, 1970).
9. A proposal that can be traced back to the early trade union movement is to vest the ownership title to production means in workers' unions joining the workers of a single production branch or industry; as suggested by Ernesto Rossi, however, this solution should be opposed in theory on the grounds that it would be impossible to find a rational criterion for defining the borderlines between different production branches or industries (see Rossi, 1965, pp. 124–30).
10. As will be discussed further on, in the relevant literature it is customary to distinguish between 'labour-managed firms', that is, firms managed by workers but entirely funded with external capital, and 'worker-managed firms', which are funded with internal resources. On closer analysis, this is the main distinction to be drawn between the numerous possible forms of labour management, because only the former type truly reverses the capital–labour relation. For a careful analysis of the difficulties encountered in defining several types of production organisms and the relevant classification, see Vanek (1975a, pp. 11–16).
11. According to a *classical*-school-type reconstruction of the theory of labour management, while the main purpose of a capitalist firm is to become a monopolist, the labour-managed firm aims to be successful, that is, to survive in order to provide good opportunities of work to its members. This means that competition between labour-managed firms is 'weak' (Liechtenstein, 1988, pp. 123–4).
12. This view has been vigorously propounded by Meade, according to whom the *main advantage* of workers' cooperatives is to improve motivation because every worker will gain a benefit and none of them will incur any losses so long as all of them act in such a way as to boost the cooperative's total net revenues (see Meade, 1980, p. 90). For arguments to the contrary, see Gui (1983).
13. This idea was first propounded by Bellers in a 1606 essay with which Marx was well conversant (see Polanyi, 1944, p. 134).
14. In Marxist thought it has often been denied that the separation of ownership from control is a current feature of modern joint-stock companies (see, for example, Sweezy, 1953b and 1971). Nevertheless Sweezy himself never denied that this was sometimes the case or, at all events, possible in modern corporations.
15. Keynes provides his demonstration of why the level of employment cannot fluctuate in a 'co-operative' economy in Keynes (1933, pp. 70–71 and 90–91).
16. For a discussion of these passages from Keynes, see Rotheim (1981) and Graziani (1984).
17. In many writings that appeared before the *General Theory* Robertson stressed the importance of the differences between a cooperative economy and a capitalist economy; and these writings, which have been further discussed in recent years (see Anyadike-Danes, 1985), influenced Keynes so much that he came to believe that crises and involuntary unemployment were the result of the 'entrepreneurial', not cooperative nature of modern economic activity.
18. In a labour-managed economy the multiplier functions exactly in the same manner as in a capitalist one in *fixprice* hypotheses, while in *flexprice* situations any rise in aggregate demand may induce firms to *reduce* output in line with the 'perverse' result of Ward that will be discussed in Chapters 8 and 9 below. In the latter case the multiplier will not function as in Keynesian theory. However, if it is assumed that workers may freely fix their working hours or purchase and sell shares in an enterprise, then Ward's perverse

result is avoided – as will be demonstrated further on – and any increase in demand will result in a Keynesian multiplier effect (see Berman, 1977; Buck, 1980, pp. 88–9; Sertel, 1982).

19. If workers are free to fix the length of their working days, a firm will reach equilibrium when the marginal productivity of labour and the marginal disutility balance out for each worker. As suggested by Buck, the situation would not change appreciably in case all the members of cooperatives were to decide to work the same number of hours (see Buck, 1980, pp. 88–9 and our own reflections in Sections 6 and 7 of Chapter 9).
20. One possible objection is that it is far from easy to predict how the process of granting capital goods to the highest bidder would be implemented in practice. An even stronger objection is that in a situation where capital goods are the property neither of the state nor of single firms, it would be more difficult to raise the loan capital needed for establishing new firms.
21. As argued by Lunghini, 'unemployment stems from the relations between capital and wage-labour' (see Lunghini, 1995, p. 14).
22. The subject we are discussing here, that is, the different economic cycles in a capitalist economy and a 'cooperative' one, was thoroughly analysed by Robertson in the 1930s, although Robertson's definition of a cooperative firm differes from ours (as also Keynes's). Unlike Keynes, Robertson merely argued that fluctuations in a cooperative economy would be less strong than in a capitalist system and not that the cycle would be entirely abolished (see Anyadike-Danes, 1985, pp. 108–13). Arguments in favour of Keynes's assumption that no fluctuations in economic activity are observed in a co-operative system are found in Rotheim (1981).
23. A thorough analysis of Weitzman's theses is found in Nuti (1986) (and Weitzman's replies to Nuti are contained in Weitzman, 1986) and Potestio (1986).
24. Excess demand for labour is due to the fact that a variable element in pay determines that a firm's marginal labour cost falls short of the full-employment value of the marginal product of labour.
25. For propositions similar to those of Garegnani, see Nell (1967) and Lippi (1974).
26. For a thorough analysis of this subject, see Jossa (1983, 1989c, 1991e and 1991f) and the relevant critical comments of Petri (1989b, pp. 232–8) and Caravale (1992, pp. 74–7). Here it will suffice to mention that Garegnani's notion of exploitation seems to differ from Marx's if only because, as suggested by Dobb, 'exploitation is neither something "metaphysical" nor simply an ethical judgement (still less "just a noise") as it has sometimes been depicted' (Dobb, 1973, p. 145). For further thorough analyses of the concept of exploitation, in addition to those already mentioned, see Morishima and Catephores (1978); Holländer (1982); Roemer (1982a and 1982b); Petri (1989a); and Miller (1990, Chapter 7).
27. What has been said so far seems to suggest a simple argument against the Neo-Ricardian theory of exploitation. If, indeed, it holds true that in a labour-managed economy income from capital is not the result of exploitation, this means that in a market economy it may have a foundation other than 'the simple circumstance that the existing economic order prevents the working class from appropriating the whole social product'.

8. Equilibrium of the self-managed firm

8.1 DEFINITION OF THE SELF-MANAGED FIRM

As has been said in the preceding chapters, as a first approximation, a firm can be defined as self-managed if the responsibilities and duties of management are carried out by its own workers. In it, therefore, the entrepreneurial function, consisting in the aggregation and organization of productive factors as well as productive activity, is performed by workers. In this way the entrepreneur is no longer an autonomous figure, still less a figure tied to the ownership of capital.

The self-managed firm, thus, overturns the typical relationships of the capitalistic firm. The workers employ capital, remunerating it in fixed measure, and, as will be shown in greater detail later, organize and guide production, keeping the residual as their own reward. The relationships between factors in this type of firm are symmetrical compared to the more widespread capitalistic firm (in which capital performs the entrepreneurial function).

At first glance it may not seem possible to exclude that a collective of workers, besides employing capital like a traditional entrepreneur, can also employ labour, putting itself on the demand side for both capital and wage labour markets. And actually the definition given in the beginning does not exclude this possibility. Also in this case, in fact, it has to be added, the management of the firm would be the concern not of the entire collective of workers, but of only part of it, comprising, most probably, those workers who had founded the firm or those who had dedicated a lot of time to it.

On closer examination, however, this kind of firm cannot be considered an authentic self-managed firm. In reality it is a capitalistic type of firm where the partners also perform productive activities, or, at least, a 'mixed' firm, half-way between the capitalistic and self-managed firm.

From what has been said, it follows that the discriminating element between the capitalistic and self-managed firm is the presence or absence of wage labour. If wage labour is there, the firm should be considered capitalistic (or, at least 'mixed'). This leads, consequently, to an improvement of the definition of the self-managed firm given above. Following Sertel we suggest that the self-managed firm is a firm in which the lists of partners, those who take the decisions and of workers, coincide perfectly (Sertel, 1982); and it is a firm, one must add, in which the main decisions are the concern of the collective of partner-workers, which decides on the basis of 'one man, one vote'.[1]

8.2 TYPES OF FIRMS

As has already been mentioned the economic theory of the self-managed firm, in its bare essentials, was formulated for the first time by an American economist, Benjamin Ward, in a 1958 article. It was subsequently developed with important contributions being made by, above all, Domar, Vanek and Meade (Domar, 1966; Vanek, 1970; Meade, 1972, 1974, 1979).

The literature that followed Ward's article has delineated different ideal types of self-managed firm. In this work, following a consolidated tradition, we will mainly consider the following three types:

1. the firm with the social (state) ownership of capital and exclusively internal financing (Vanek, 1975; Furubotn and Pejovich, 1970a);
2. the firm in which capital is exclusively financed by borrowing (Vanek, 1975, 1977; Jossa, 1986) or which is taken entirely on lease (Jensen and Meckling, 1976);
3. the firm in Western countries where the ownership of capital belongs to partners and there is a possibility of both internal and external financing (Askildsen, 1988; Sertel, 1982).

The first category is clearly inspired by the type of firm that from the beginning of the 1950s to the end of the 1980s (Furubotn, 1971), with many ups and downs, was developed in Yugoslavia. Their fundamental characteristics are the following:

a. The ownership of capital is social and therefore belongs to the state; firms have the right to use it against an annual interest payment in proportion to its value.
b. Firms have the responsibility of the capital assigned to them which they can dispose of freely for productive ends. This can also be sold (in the sense that the right of its use can be given away) to other firms as long as it is replaced. Possible losses due to the transfer, measured by the difference between the sale price and book value[2] of the good, must be subtracted from the firm's profit and, furthermore, it is maintained (Furubotn and Pejovich, 1970a, p. 433) that the substitute investment should have at least the same value as the disposed good. In other words, the partners have the obligation to maintain the value of the capital. We will see below that this is a very important but rather unclear point. In the literature there are many diverging interpretations that influence in no small measure the conclusions about the ability of such firms to invest.
c. Since the right of ownership of capital is a right of use, any reimbursement is not incumbent upon the partner who leaves the firm for whatsoever reason.

Initially, the financing of the Yugoslavian firm was exclusively internal (Furubotn, 1971). Subsequently, external financing from the state banks grew to the point where, as will be seen below, it assumed a predominant role. The type of firm examined here, therefore, is only a theoretical case and is worth examining because it maintains the validity of the extreme case. This type of firm is defined as a 'worker-managed firm' (WMF) by Vanek (1975).

The second type of self-managed firm that we have listed is the one with exclusively external financing. This type of firm has many characteristics in common with the earlier one from which it is derived. This corresponds to Vanek's 'labour-managed firm' (LMF) and is often referred to in the literature because of its interesting characteristics. Vanek, who has examined it in detail, does not draw a distinction between the firm that borrows money on loan to buy capital goods and that which obtains the means of production directly by hiring them (Vanek, 1975); and, in fact, there is no difference either from the point of view of production or from the point of view of the costs met by the collective for the use of physical capital. The situation changes, however, when one considers trends in financial flows, which, in the case of external financing, may be influenced in some measure by partners through negotiations of a plan of depreciation that postpones reimbursement of the loan transferring the burden on to future workers. It will be seen later that such a possibility can become important in the context of the attitude towards investment.

The essential characteristic of this type of firm is that, given the prohibition on self-financing, it permits a high degree of differentiation between income derived from labour and capital. At the end of each year the overall profits obtained are distributed among partners. Recourse to external credit concerns the necessities related to management, and particularly to investments. Nothing prevents the partners from investing their savings in their firm, for example, acquiring its bonds and thus becoming its creditors, similar to any other external financier.

Partners, as in the case of the WMF, do not have the right to any refund when they retire from work or when they change their type of work. It is understood, obviously, that they maintain ownership of any credit due to them.

Finally, let us consider the cooperative firm of the Western kind which cannot strictly be called the socialist firm, with which we are concerned in this work, but which is discussed here for completeness and for a comparison with other forms of cooperative firm.

Self-managed firms in Western countries vary enormously in their characteristics. All of them are inspired by the so-called 'universal cooperative principle',[3] but the interpretations of this principle, above all on the theme of property rights, are extremely diverse. The range arising from differing legislation in Western countries goes from firms which resemble the WMF to firms where the partners have the right to freely dispose of capital raised in extraordinary (initial contributions) and ordinary (by corporate savings) ways (Zan, 1990). Since the examination of the differing institutional setups does not fall within the scope of this work, when we talk about the Western-type of cooperative, we refer to an ideal type which, above all on the theme of property rights, exhibits the maximum contrast between the two types of firms described above. This has the following fundamental characteristics:

a. Partners have the full ownership of capital. Consequently, in recession, which can happen at any time, a partner has the right of payment of a quota of net capital of the firm. The quota is calculated on the basis of the relationship between the partner's initial contribution and the current net capital value of the firm.
b. Both self-financing and the recourse to external credit are allowed.
c. The quota of capital brought in by partners can be of differing amounts, but in the assembly, the rule of one vote for one partner is in force.

8.3 SHORT-TERM EQUILIBRIUM

Now we shall present the basic model which describes the behaviour of the self-managed firm in the short term. As has been said, this was analysed for the first time by Ward in 1958 with clear reference to the type of firm that was developed in Yugoslavia from the beginning of the 1950s. Reference to the reality of this country, as can easily be surmised, has been a constant feature of the literature on the subject and has often presented an obstacle to the development of the theory. In fact, institutional arrangements, contrary to a widely-held belief, play an important role both in the basic model, which will be examined shortly, and in the question of underinvestment, which will be discussed in greater detail in Chapter 10. In fact, it will be seen that some of the specifically Yugoslavian institutional constraints have been incorporated into the basic model which, consequently, raises doubts about its generality.

The analysis that follows in this and the following chapters will examine the behaviour of the self-managed firm with reference to its capitalistic[4] 'twin'. By the latter we mean the capitalistic firm which has the same production function

and which finds itself facing identical market conditions (Ward, 1958, p. 576). Besides, for brevity, following the conventions of the international literature, this will also be indicated by PMF (profit-maximizing firm) and for simplicity, will refer to the type of firm represented by the joint-stock company. The underlying assumptions and initial hypotheses of the model under consideration are:

a. perfect competition (prices of the firm's product and capital are given);
b. no uncertainty over prices;[5]
c. income, constituting the difference between revenues and the costs of capital, independent of age and experience, is equally subdivided among partners;
d. all decisions are taken by a majority of the assembly of partners;
e. the assembly decides what, how and how much to produce, subject only to market rules. Consequently, in the short term, it decides also about the number of partners, having the power to increase or decrease them.[6] It is implicit in the model that the possible 'firing' of partners does not carry extraordinary costs for the firm, so that the firing of workers carries no additional costs for the PMF;
f. the cost of capital consists of a percentage (r) applied to the physical quantity of capital (K) multiplied by its price (p_k). In the case in which ownership of the means of production by the collective of partners is allowed, r will represent the sum of the market interest rate and the annual quota of depreciation, expressed together in unitary terms. Instead, if the lease of physical capital or its concession by the state is assumed, then r will constitute the rent or the unitary tax (for every pound of capital).

Particularly on the basis of the hypothesis that those who participate in production divide up profits equally among themselves, the problem raised by Ward has been to determine the number of partners which maximizes an individual's earnings on the basis of the production function:

$$X = f(K, N)$$

where X is the physical quantity of product, K is the physical capital employed and N represents the number of partners. By definition, the income of a single partner (y) will be:

$$y = \frac{Xp_x}{N} - \frac{Kp_k r}{N}$$

where p_x is the market price of the product and the first and second terms of the right-hand side of the equation represent revenues and costs for each partner-worker, respectively.

In examining the behaviour of the self-managed firm, Ward and other economists to whom the original model is usually attributed have used traditional instruments of the theory of the firm maintaining all its assumptions. The partner-workers, thus, tend to maximize individual income in the same way as the traditional entrepreneur tends to maximize profits. In the short term, in line with the traditional analysis of the capitalistic firm, capital is taken as fixed so that the only variable element left is labour.[7]

Consequently the function to be maximized is the following:

$$\underset{N}{Max}\ y = \frac{Xp_x}{N} - \frac{Kp_k r}{N} \tag{8.1}$$

with the constraint represented by the production function indicated above.

The first-order conditions give the following equation:

$$\frac{\partial X}{\partial N} p_x = \frac{XP_x - Kp_k r}{N} \tag{8.2}$$

where $\partial X/\partial N$ is the physical marginal product of labour. From this it is deduced, assuming that the second-order conditions are satisfied, that (8.1) is maximized when the value of the marginal product of labour $[(\partial X/\partial N)p_x]$ is equal to the average compensation received by partners $[(Xp_x - Kp_k r)/N]$.

The result obtained is not surprising. In fact, it becomes evident that partners of the self-managed firm will benefit from increasing production and therefore to coopt new members until the value of the additional production obtained will be greater than the reward that will go to the new entrants. On the basis of the hypothesis indicated in (c) the reward that will go to the 'marginal' partner is nothing but the average reward, which, beyond the point of equilibrium, will tend to decrease less than the value of the marginal product.

8.4 GRAPHIC REPRESENTATION OF THE SHORT-TERM EQUILIBRIUM

All this can be seen more clearly by examining Figure 8.1. The two graphs have the number of partner-workers on the horizontal axis and on the vertical axis the values of microeconomic variables which may be considered one by one.

Figure 8.1A represents total values while Figure 8.1B represents the corresponding average and marginal values. Let us begin by examining the first. The 0*ABCDE* curve represents a production function in its more usual form first with increasing and then with decreasing marginal productivity (from the origin to the saddle point *B*). Each point of the function explains the value of the sale of output (total revenue) since each single quantity is multiplied by the market price which, because of the assumption of perfect competition, is given. The *MF* line parallel to the horizontal axis delimits the total cost of capital that is fixed at the 0*M* level for every possible volume of output (and employment) as the quantity of capital employed does not vary in the short term. The 0*L* vector tangential to the curve of the production function at *C* serves to determine the total level of output 0*I*, obtained with employment equal to 0*R* which corresponds to the maximum average product per worker. It is well known that any ray leaving the origin and having points in common with 0*ABCDE* forms an angle with the horizontal axis whose gradient indicates the average value of the function at those points. As is evident from the form of the 0*ABCDE* curve, the largest angle is given by the vector 0*L*. Therefore, the gradient of this angle (0*I*/0*R*) coincides with the maximum average value of the function.

Similar reasoning could be used to determine the levels of output and employment which maximize average income. Again from Figure 8.1A it is possible to see that there is positive net income at levels of production superior to 0*M*. The *MF* curve, therefore, subdivides the graph into two areas: the first, above the curve, in which there is net income; the second below the curve, where the cost of capital is higher than total revenue and therefore there are losses. The value production function that is found above the *MF* line, indicated by the letters *ABCDE*, may thus be considered the net income curve. Consequently, tracing the *MZ* vector tangential to *ABCDE*, the levels of output and employment which allow the partner-workers the maximum per capita income are determined. It can be seen from the figure that the tangency point *D* determines the level of total output 0*H*, associated with a number of employees equal to 0*S* which, in the short term, maximizes average income.

Figure 8.1B, which is derived from Figure 8.1A, shows the results obtained so far more explicitly. The *pmgv* curve indicates the value marginal product of labour which, as is well known reaches its maximum in correspondence with the saddle point of the production function represented in Figure 8.1A. The *pmv* curve shows the trend of value average outcome whose maximum, equal to 0'*T* (corresponding to point *C* in Figure 8.1A), is achieved at the intersection with the marginal product curve. The number of employees associated with the maximum average output is 0'*R*' = 0*R*. The *cfm* curve is an equilateral hyperbola and represents the per worker cost of capital. Finally the *rm* curve indicates average income per worker and represents the vertical difference between curves *pmv* (value of the average output) and *cfm* (average cost). It reaches its maximum value at the tangency point *D* of Figure 8.1A and at the point of intersection with the *pmgv* curve. Finally, at this point the *pmv* and *cfm* curves have the same slope, that is $\partial pmv/\partial N = \partial cfm/\partial N$. The maximum value of average income, 0'*P*, is, therefore, obtained when the total output achieves a value equal to 0*H* and there are 0*S* = 0'*S*' workers employed.

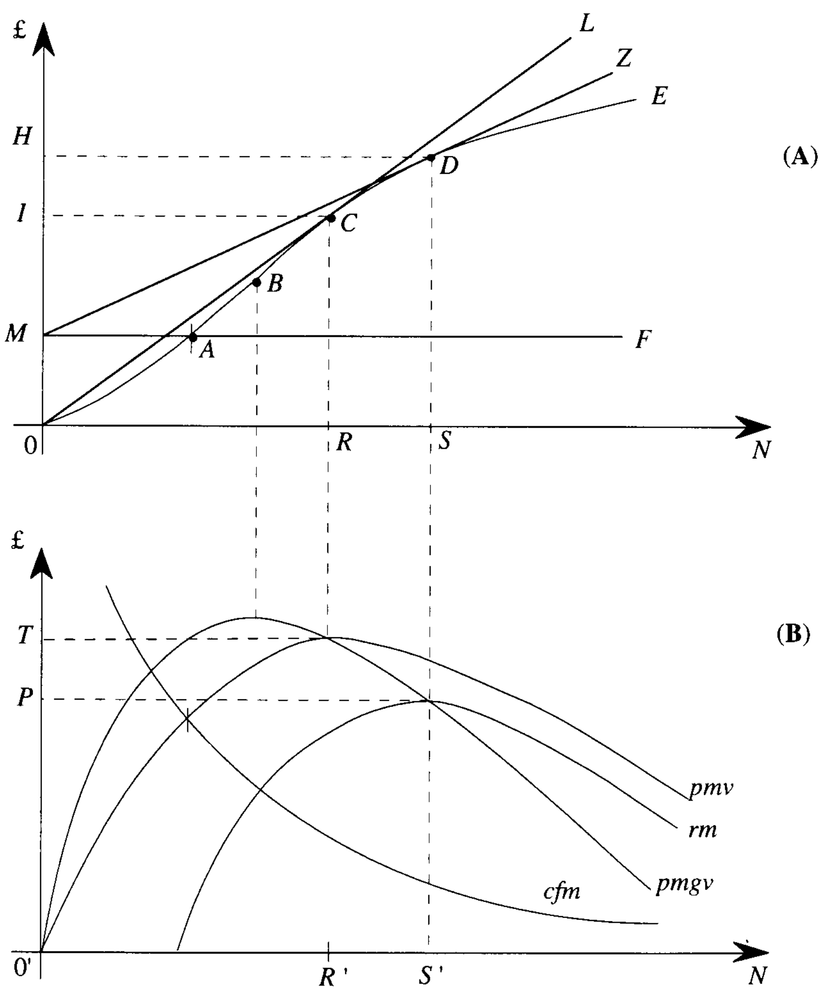

Figure 8.1 Short-term equilibrium of the self-managed firm in perfect competition

From the examination of the two figures together it is possible to see that, starting from the equilibrium level of employment 0'*S*' = 0*S*, a reduction in the number of partner-workers reduces average income and total output but, at an earlier point and as long as the employment is greater than 0'*R*', it causes an increase in average output (revenue). The reduction of income, therefore, is caused by the increment of the fixed average cost which in absolute value is greater than that of average revenue. On the other hand, an increase in employment immediately reduces average output and cost, with a greater effect on the former, causing a reduction in average income. From the marginal product curve it is possible to see that for levels of employment less than 0'*S*', it is worthwhile for the collective to coopt new workers as the resulting additional output added by them is greater than the income withdrawn by them (together with all other partners). If the number of employees is greater than 0'*S*' then the opposite happens: the output of the new partners will be less than the income which would be paid to them (and to all others) and, therefore, there will be a reduction in the average income, that is a worsening of the situation of the pre-existing partners.

8.5 THE SELF-MANAGED FIRM AND THE CAPITALISTIC FIRM

The comparison with the capitalistic firm is fairly obvious. Naturally, a capitalistic firm subject to a similar production function should be considered.[8] As is well known, the capitalistic firm will tend to maximize overall profit, that is, the difference between revenues and costs, where the latter also includes wages. In fact, in this case, the income of workers is no longer the residual to be subdivided among the partners of the firm but represents a predetermined cost, while the profit which goes to the entrepreneur represents the residual. In this case the function to maximize is the following:

$$\underset{N}{Max}\ y' = Xp_x - Kp_k r - Nw$$

where y' is the profit of the capitalistic firm and w is the market wage.

The first-order conditions give the following equation:

$$\frac{\partial X}{\partial N} p_x = w \tag{8.3}$$

where $(\partial X/\partial N)$ is the marginal physical product of labour. Equation (8.3) is the well-known equation indicating that the capitalistic firm in the short term should increase production and employment until the value of the marginal product of labour is equal to the wage.

Now considering equations (8.2) and (8.3), it becomes evident that the two firms, in a situation of short-term equilibrium, will have the same number of employees when:

$$\frac{Xp_x - Kp_k r}{N} = w \tag{8.4}$$

that is, when the wage of the capitalistic firm is equal to the reward received by the workers of the self-managed firm. In fact, only in this case would the values of the marginal products of labour, and, since they have the same production function, the number of employees of the two firms, be equal.

This result may be seen more clearly with the help of Figure 8.2 which reproduces Figure 8.1B with some modifications. The figure allows a comparison of equilibrium in the two types of firm. The figure shows the curves of the values of marginal product (*pmgv*), average output (*pmv*) and the average cost of capital (*cfm*) assuming a common production function. The *rm* curve indicates the average reward of the workers of the self-managed firm while the straight line *w* represents the wage level in the capitalistic firm. In contrast to Figure 8.1B the *cfm* curve is pushed upward by $0S = AB = CM$, that is, so as to be equal to the wage of the capitalistic firm. Hence its ordinates indicate the total average cost of output (wage plus the cost of capital). This is valid for the capitalistic firm in which it is of fundamental importance to distinguish between labour costs (part of the total cost) and profits, but it can also be extended to the self-managed firm if it is hypothesized that the income of its workers is subdivided into two ideal parts: one fixed quota equal by assumption to capitalistic wage and the other variable quota equal to average profits (and, therefore, not necessarily positive). Because of this transformation, the average income of the self-managed firm is now equal to the vertical difference between the *pmv* and *cfm* curves (average profit for workers) plus the level of conventional wage equal, as has been said, to $0S$.

On the basis of what has been stated in the last section, the self-managed firm is in equilibrium at E which corresponds to a level of employment equal to $0A$ and an average income equal to $0R = AE$. In relation to the level of employment $0A$, in fact, the vertical distance between the *pmv* and *cfm* (maximum individual profit) curves is at a maximum and, besides, the marginal product of labour (*pmgv* curve) and the average income (*rm*), interpretable within the framework of the self-managed firm as the effective cost of labour, are equal. It is also possible to note that, in the self-managed firm, the conventional wage is completely irrelevant. A rise in wage, in fact, causes the same amount of reduction of the profit per worker leaving the total

average income unchanged. In terms of the figure an upward shift of the line w (wage) causes a shift of the *cfm* curve in the same measure and in similar direction. Thus the vertical distance between the *cfm* and *pmv* curves is reduced to such an extent that the sum of the segments AB and DF will always be equal to AE.

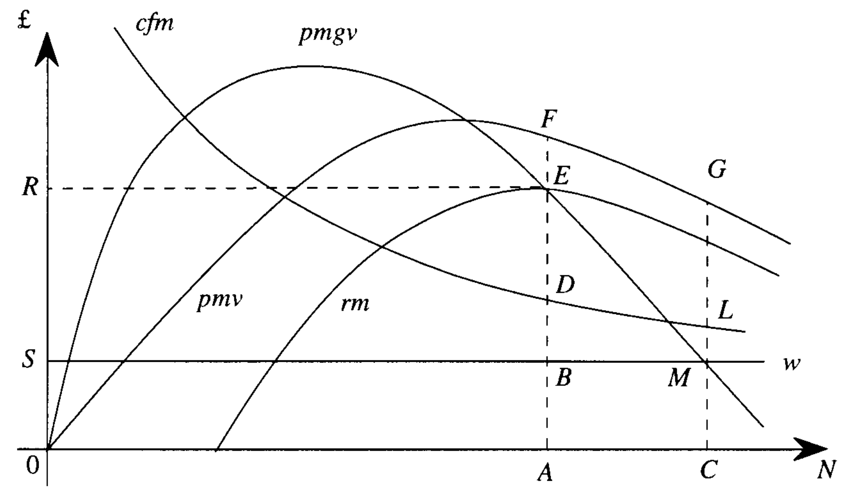

Figure 8.2 Short-term equilibrium of the self-managed firm and the capitalistic firm in perfect competition

Now let us turn to the capitalistic firm. Remembering the usual rule it is in equilibrium at point M, where the marginal product of labour and the wage (effective cost of labour in this type of firm) are equal, with employment equal to $0C$ and the level of wage equal to $0S = CM$. The segment GL indicates profits received by the entrepreneur per employed worker.

In the situation represented, therefore, although the capitalistic firm has the same production conditions as the self-managed firm, it provides a greater level of employment. From Figure 8.2 it is possible to observe that this situation will be maintained as long as the wage is less than the average income in the self-managed firm. In the case where the wage increases from $0S$ to $0R$, the capitalistic firm would have the same number of employees as its self-managed counterpart ($0A$). In this situation the profit will vanish completely and workers will receive the entire surplus in the form of wages. The retributive conditions of the waged workers in the capitalistic firm would thus become identical to those of the partner-worker in the self-managed firm. If a further growth of the wage beyond the level $0R$ is assumed, then it is possible to see that the number of waged workers of the capitalistic firm will be less than the number of workers in the self-managed firm. It is possible, then, to conclude that in the presence of positive profits, the level of employment in the capitalistic firm is higher than it is in the self-managed firm. In case of losses, however, the opposite occurs. Finally, if the workers of the capitalistic firm receive the entire surplus and there are, therefore, zero profits (that is, if *pmgv*, *rm*, and *w* intersect at the same point), then the two firms employ the same number of workers.

8.6 VARIATIONS OF MARKET CONDITIONS

Now let us turn to the reactions of the self-managed firm to stimuli from the market. The literature has looked mainly at its anomalous response to variations in the cost of capital and the price of the sold product.

Let us start from the equilibrium condition represented by equation (8.2). By a simple algebraic transformation we derive the following reformulation:

$$\frac{X}{N} - \frac{\partial X}{\partial N} = \frac{K p_k r}{p_x N} \qquad (8.5)$$

The left-hand side of the equation expresses the difference between average and marginal product which is positive and increasing in N, beginning from the maximum value of the average product per worker (Figure 8.1B). In equilibrium this difference is undoubtedly positive. If, in (8.5), r or p_k (capital cost parameters) increases, the value of the right-hand side increases and, therefore, the value of the difference on the left must also increase. This inevitably means an increase in employment (and in production). However, if p_x increases, the value of the ratio on the right-hand side falls as must, consequently, the difference between the average and the marginal products, leading to a reduction in employment and production.[9]

The effect of variation in the parameters can be clarified by a graphical analysis. Figure 8.3A shows the effect of a variation in the price of the product on employment. The $0P'$ curve is analogous to the value production function of Figure 8.1A and the labels on the axes are the same. The total cost of capital is $0H$, hence the point of tangency A between the HC vector and the $0P'$ curve determines the equilibrium level of employment, Na'. Now let us suppose that the price of output increases. Remembering that the position of every point of the $0P'$ is the product of the physical quantity of output and price, the effect of the increase in price can be represented by a proportionate upward shift of the curve to a new position $0P''$. If the increase in the price were 10 per cent the

ordinate of every point of $0P''$ would be 10 per cent greater than that of every corresponding point of $0P'$. It can easily be observed that, now, the point of equilibrium given by the point of tangency B on the axis $0N$, indicates employment equal to Na'', less than the previous level Na'. Paradoxically, an increase in the price of the product determines a fall in its supply and similarly a decrease in employment. Therefore this type of firm presents a supply curve with a negative slope.

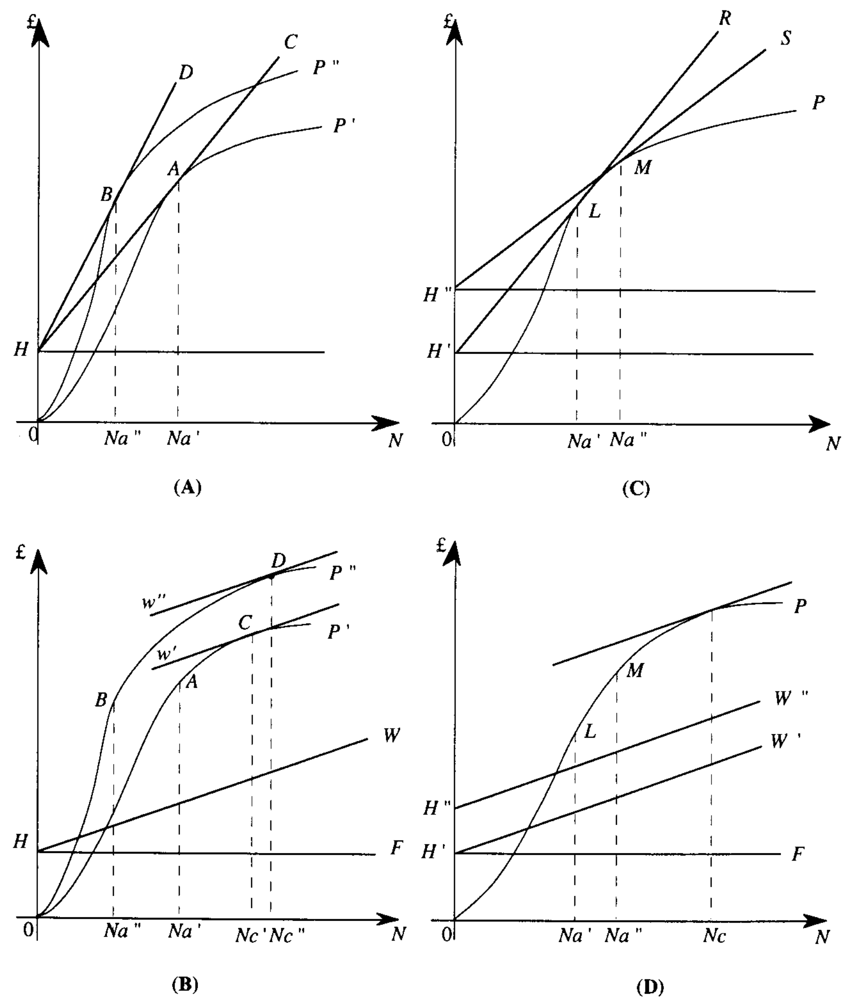

Figure 8.3 Reactions of the self-managed firm and the capitalistic firm to variations of market conditions

It is possible to compare the differences of reactions to the variations of the price of the product between the capitalistic and the self-managed firms. Let us observe Figure 8.3B for this. The two curves $0P'$ and $0P''$ are those of Figure 8.3A. The points of equilibrium, A and B, are taken from the preceding figure and on the horizontal axis give the corresponding levels of employment Na' and Na''. Let us now consider the curve HW. Its ordinates show the total cost of production (cost of capital plus wages) in the capitalistic firm and its gradient indicates the wage. Total profit for this type of firm, for each level of N, is represented by the vertical distance between the total revenue and the total cost (HW) curves. Maximum profit occurs at the point where $(\partial X/\partial N)px = w$, that is at the point where the two curves have the same slope. At the initial level of product price, employment in equilibrium will be Nc', corresponding to the point of tangency C between the $0P'$ and the w' curves, the latter having the same slope as HW. An increase in the price of the product causes a shift of the $0P'$ curve to $0P''$, leading to the new point of tangency D and the new higher level of equilibrium employment, Nc''. The line w'' is, of course, parallel to the half-line HW.

Therefore, from the point of view of the level of production and employment, the capitalistic firm, besides beginning from a position which, *ceteris paribus*, is more favourable than the one of the self-managed counterpart ($Nc' > Na'$), responds to an increase in the price of the product with the well-known reaction of a further enlargement of production and employment. In other words, its supply curve has the usual positive slope.

Similarly, the expansive effect of an increase in the cost of capital can be shown. In Figure 8.3C the curve of total output in value $0P$ is now associated with two levels of the cost of capital. Using the two vectors $H'R$ and $H''S$ it can be seen that when this is equal to $0H'$, employment is Na'. If the cost of capital rises to $0H''$, the level of employment increases to Na''. This also is a remarkable result when compared with the reaction of a capitalistic firm to an increase in fixed costs. It is well known, in fact, that such a variation does not influence the output level that maximizes profit, and hence, does not alter the number of employees. A comparison between the reactions of the two firms to an increase in fixed costs is shown in Figure 8.3D, using the same instruments as before. The $0P$ curve has been taken from Figure 8.3C with points L and M, which, projected on the horizontal axis, determine the two levels of employment, Na' and Na'', considered earlier. The curve $H'W'$ has also been traced reflecting the wage paid by the capitalistic firm. The rate is measured by the width of the angle $W'H'F$. It is possible to see that equilibrium employment for the capitalistic firm, given by the point where $0P$ and $H'W'$ have the same slope, is equal to Nc and does not vary if the cost of capital increases from $0H'$ to $0H''$. The increase in the cost of capital, in fact, provokes an upward shift of $H'W'$ to the new position $H''W''$ without changing its slope.

8.7 THE LONG-TERM ADJUSTMENTS

From what has been seen in earlier sections, according to Ward's model the behaviour of the self-managed firm in the short term is far from the optimum. Labour is repulsed by more profitable forms of employment and attracted by less efficient ones. Individual firms represent 'islands' that communicate little and are not in tune with the market. This is because of the absence of the notion of the market wage which, like any other price, provides a signal for capitalistic firms leading to an efficient allocation of resources. The functioning of self-managed firms, instead, works with the differential remuneration of labour across different firms with little possibility of workers leaving the firm where the remuneration of labour is low to those where income is high simply because each firm is 'frozen' in its specific equilibrium situation, characterized by a marginal product of labour and retribution which is different from other firms. In the short term, therefore, according to this model, there is no mechanism of adjustment that allows an optimal use of resources.

The situation changes completely if we consider the long term, that is allowing the possibility of changing both the productive factors and, above all, the possibility of entry of new firms in the sector – a typical characteristic of perfect competition with which we are concerned. If the possibility of adjustment of capital is introduced, it is reasonable to assume that new investment will be directed towards sectors and firms with higher income and the new productive units would consist of workers who have left the less efficient firms or those in the less profitable sectors. At the end of this process, the increase in the supply of products in the more efficient sectors will cause a reduction in prices and a levelling of incomes. The Pareto optimum, non-existent in the short term, comes to life in the long term and the equilibrium condition in the capitalistic and self-managed firms are, in this case, the same.

Formally what has been stated can be examined beginning from the objective function (8.1) whose first-order conditions in the long run are:

$$\frac{\partial X}{\partial N} p_x = y \tag{8.6}$$

$$\frac{\partial X}{\partial K} p_x = rp_k \tag{8.7}$$

Equation (8.6) is no more than a reformulation of (8.2), that is of the conditions of short-term equilibrium, remembering that $y = (Xp_x - Kp_k r)/N$. This indicates that in equilibrium the value of the marginal product of labour must be equal to the average reward received by the partners. Similarly (8.7) provides the value of the marginal product of capital that in equilibrium must be equal to its market price. By substituting (8.6) and (8.7) in (8.1) and, after a simple algebraic transformation, we obtain:

$$X = N\frac{\partial X}{\partial N} + K\frac{\partial X}{\partial K} \tag{8.8}$$

from which it follows that: (1) the entire product is distributed to factors; and (2) productive factors are remunerated according to the respective marginal products.

As is well known, these conditions coincide with those characterizing the long-term equilibrium of a capitalistic firm. It may be concluded, therefore, that in the long term the self-managed firm has a behaviour similar to the capitalistic firm.[10]

NOTES

1. Existing cooperatives employ, as a rule, waged labour. In the celebrated group of cooperatives in Mondragon, it is believed that a well-organized cooperative is one in which 10 per cent of workers are not partners (even if all workers are encouraged to become partners). Often cooperatives find it difficult to recruit managers as partners and have to employ them on a contractual basis (Whyte, 1991).
2. By book value we mean the purchase cost net of depreciation (see Zanetti, 1979).
3. The custodian of the traditional Western cooperative, at an international level, is the International Cooperative Alliance (ICA), which in the last conference on the subject (Vienna, 1966) presented a reformulation of the six principles that should regulate self-managed firms. (1) They are voluntary and may be joined by anybody with the minimum requisites and a willingness to participate; (2) they are democratically administered (one person, one vote independently of possible capital contributions); (3) if there is a payment of interest on the capital contributed by partners, it must be extremely limited; (4) the distribution of surplus or savings among partners is equal; (5) there is the diffusion of cooperative education; and, (6) there is collaboration amongst cooperatives (ICA, 1967 and 1984).
4. Ward (1958), Domar (1966) and Vanek (1970) introduce this term in the literature on self-management to indicate the traditional firm. Meade, in contrast, uses the term 'entrepreneurial'.
5. For the consequences of the removal of this assumption see Muzondo (1979), Bonin (1980) and Hey and Suckling (1980).
6. There is a vast literature on the scanty realism of the hypothesis of firing being decided by the majority. Among others, see Robinson (1967), Horvat (1967, 1972, 1986), Steinherr and Peer (1975) and Steinherr and Thisse (1979a, 1979b).
7. The acritical extension of the Marshallian model of the self-managed firm raises some problems. The fact that the 'entrepreneurial input', to use Dubravcic's (1970) expression, decides to sacrifice itself and to leave the assumed input unchanged is, to say the least, odd. This point will be discussed in more detail in the following chapter.
8. We exclude, therefore, the possibility of 'x-inefficiencies' in the two firms.

9. For a different demonstration of this, see Estrin (1983) or Giannola (1989b).
10. The conclusion that, under perfect competition, long-run equilibrium in the self-managed firm is identical to that in the capitalistic firm was first reached by Drèze using a general equilibrium framework (Drèze, 1976, 1985 and 1989, however, see also Ward, 1958 and Vanek, 1970); but, on closer inspection, this conclusion is intuitively obvious as Samuelson pointed out when he observed that, 'in a perfectly competitive market it doesn't really matter who hires whom' (Samuelson, 1957, p. 894).

APPENDIX THE SELF-MANAGED FIRM UNDER MONOPOLY

Until now, the behaviour of the self-managed firm has been analysed in a situation of perfect competition. Let us put aside this assumption and consider a situation of monopoly.[1] As is well known, under monopoly the firm is no longer constrained to sell at the price imposed by the market but can move along its demand curve choosing to determine either the price or the quantity produced. The level of employment (and output) that in the short term maximizes the income of partners is determined by the function already introduced in the case of perfect competition:

$$y = \frac{Xp_x}{N} - \frac{Kp_k r}{N} \tag{8A.1}$$

given the production function, $X = f(K, N)$, and considering that now the price of the product is not fixed but dependent on produced output so that:

$$p_x = f(X)$$

In the short term the first-order condition relative to the variable N is the following:

$$\frac{\partial X}{\partial N}\left(p_x + \frac{\partial p_x}{\partial X} X\right) = \frac{Xp_x}{N} - \frac{Kp_k r}{N} \tag{8A.2}$$

Equation (8A.2) shows that the self-managed firm will increase the number of employees as long as the marginal product of labour ($\partial X/\partial N$) evaluated on the basis of marginal revenue $[p_x + (p_x/X)X]$ is not equal to the average income.

Figure 8A.1 shows the effects of monopoly on the values of the production and employment. The $0P'$ curve represents the value production function (total revenue), given the price, examined earlier in the case of perfect competition. On the other hand, $0P''$ represents a possible curve of total revenue under monopoly, referring to the same curve of physical production function below $0P'$ (not shown). The segment $0H$ measures the fixed cost of capital and using the two vectors initiating at H and tangential to $0P'$ and $0P''$ curves, respectively, at points C and M, it is immediately possible to see how the number of employees in monopoly (N_m) is lower than that in perfect competition (N_{cp}), due to the lower level of production. Hence monopoly has the same negative effect on the output of both self-managed and capitalistic firms. At D the two total revenue curves intersect with a value of production equal to $0R$, corresponding to the point where the price applied by the monopolist coincides with that of perfect competition. For lower levels of production the total revenue of the monopolist is higher given the higher price imposed by the market, whereas the contrary occurs for higher productive levels.

Figure 8A.1 also shows that variations in the price of the product and the cost of capital would have the same effect on employment as they would have in perfect competition. An increase in the product price, caused, for example, by a shift in the demand curve (leaving price elasticity constant), will cause an upward shift of the $0P''$ curve shifting left towards the tangency point with vector HM. Consequently the level of employment of equilibrium will decrease. An upward shift of the curve HF, reflecting an increase in the cost of capital, would, in contrast, lead to a shift to the right of the point of tangency M, with a related increase in labour demand.

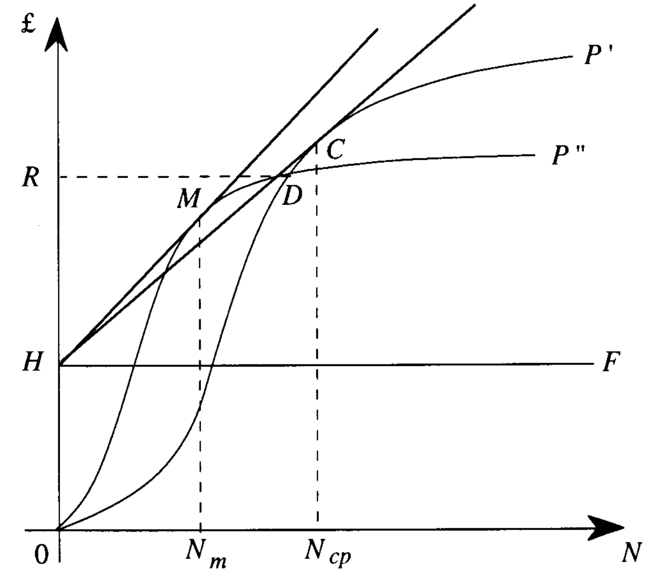

Figure 8A.1 Effect of monopoly on employment in the self-managed firm

It may be useful at this point to bring together the two comparisons between self-managed and capitalistic firms in situations of perfect competition and monopoly. Figure 8A.2 shows this comparison with the help of average and marginal values. The symbols have the following significance:

rmm = average income in monopoly
rmcp = average income in perfect competition

$$N\frac{\partial X}{\partial N}MR = Xp_x - K\frac{\partial X}{\partial K}MR$$

Dividing through by marginal revenue and reorganizing one obtains:

$$X\frac{p_x}{MR} = N\frac{\partial X}{\partial N} + K\frac{\partial X}{\partial K} \tag{8A.4}$$

We know, now, that in normal conditions (when the demand curve has a negative slope) price is constantly higher than marginal revenue and therefore the ratio $p_x/MR > 1$. Consequently:

$$X < N\frac{\partial X}{\partial N} + K\frac{\partial X}{\partial K}$$

a situation which explains the incapacity of the obtained product to remunerate the utilized factors maximally. In other words, despite finding ourselves in the long-term equilibrium we are not in a situation defined by Vanek as 'maximum physical efficiency' but considering a production function that implies a long-term U-shape curve, we find ourselves to the left of the point of minimum, evidently with poorly exploited returns to scale.

These restrictions are not found in the capitalistic firm in monopoly in the long term. It is well known, in fact, that the capitalistic firm can operate in the long term at any point of the production function (and consequently of the long-term cost curve) subject only to the size of the market and the available technology.

NOTE

1. The fundamental contribution for the extension of the basic model to situations which are not perfectly competitive is due to Meade (1974).

9. Criticism of Ward's model

9.1 INTRODUCTION

In the preceding chapter it was seen that, according to Ward's model, in the short term the self-managed firm is not able to guarantee the best allocation of resources because the forces that would push labour towards the more productive activities are not present in it.

A substantial part of the literature that followed Ward's article has made the effort to show that such an outcome derives from the particular simplicity of the hypotheses underlying the model and above all from the fundamental hypothesis according to which the sole objective of the firm is the maximization of the individual incomes of partners. Undoubtedly the introduction of a single, and, what is more, easily measurable and 'tractable' variable in the maximand, makes the model very simple and elegant but, unfortunately, unrealistic.

Beginning with Domar's 1966 article, there have been numerous contributions tending to correct the limitations of the model that are at the origin of the analysed paradoxical behaviour. In fact, in Ward's original work itself some situations were delineated which, in attempting to make the basic model more realistic, underlined some possibilities for overcoming the presumed suboptimization of the self-managed firm.

However, contributions which tried to innovate more radically came later. As it will be seen in this chapter, an important step forward has been that of constructing an objective function with an additional argument with respect to the average dividend: the firm tries to maximize individual income taking into account the effort needed to achieve it. The hours of work of partners become, therefore, a key variable to understand the working of the self-managed firm (Vanek, 1970; Berman, 1977; Berman and Berman, 1978; Sertel, 1982). The introduction of such a maximand, just a little more complex than Ward's, serves to reduce perverse behaviour and to show that the self-managed firm does not divert resources (above all labour) from productive use.

Moreover, a number of authors have explicitly introduced the level of employment in the objective function associated either with the maximization of dividends (Law, 1977) or as an independent argument (Levin, 1984), thus exposing themselves to the accusation of predisposing *ad hoc* models, that is, tending to overcome the main problem under discussion using assumptions explicitly aimed at eliminating it.

In fact such an assumption has a certain legitimacy since it is not possible to exclude *a priori* that, in certain circumstances, the origin of the cooperative in Western countries is stimulated by the necessity of defending the level of employment where capitalistic firms have failed to do so. In such cases the primary objective of the workers is to maximize or, at least, maintain the number of employed people.[1]

The models which will be discussed in this chapter do not include the level of employment among the variables in the objective function. At the same time, maximization of average income is retained, both of which restrictive conditions put the functioning of the self-managed firm under severe test. The consequences of the short-term utilization of variable inputs other than labour or from the introduction of the hypothesis of diversification of production with two or more outputs will be discussed briefly in Section 3. Even if such proposals do not subvert the conclusions of the original model, they serve to demonstrate that it does not extend to the more general case. Some important and increasing modifications that occur in the results of the model when first the labour supply curve and subsequently workers' preferences on the matter of the intensity of work are introduced will be discussed in Sections 4 to 7. Section 8 is dedicated to Meade's proposal of the 'inegalitarian cooperative'. In the final section, however, some of the other numerous criticisms of the basic model which we consider relevant will briefly be considered.[2]

9.2 INITIAL CRITICISMS OF THE BASIC MODEL

One of the 'stronger' hypotheses of Ward's model is the possibility of firing workers, without cost, on the basis of pure economic rationality. As has been seen, Ward's model predicts the reduction of partners in the case of an increase in the price of the product or a decrease in the price of capital – not rare occurrences in any type of economy. According to the logic of the model, based on the maximization of average income, firing one group of workers leads to an increase in the income of the remaining workers in the firm and the reduction to zero of the income of the redundant workers. It also should be noted that, even if no redundancies take place, the income of all partners would increase as a result of the rise in price of output or the reduction in the price of capital, albeit not to the same extent. The maximization of the income of the surviving partners, which is equivalent to their greater enrichment, is thus achieved at the cost of the excluded partners. These considerations do not undermine the internal coherence of the model, but would be relevant if a system founded on this type of firm were realized, because the rules for

redundancies should be defined and a solution be provided to the social problems created by it. All of this, without taking into account that the solidaristic aims which are at the foundation of the self-managed firm, would not permit the paradox of the firing of workers by the decision of other workers simply in order to enrich themselves.[3]

In this direction a useful attempt has been made to modify the objective function of the model so as to maximize the average income of all partners, including those who are destined to be excluded (Brewer and Browning, 1982). In this case, it is easy to see that it is possible to increase average income, and to therefore have recourse to firing only if the partners selected for exclusion can count on a remuneration outside the firm which is higher than that attainable within the firm. Such an evaluation must be done after overall income is recalculated taking into account variations in market parameters (price of output and of capital). In the case in which the predicted income for excluded partners is zero or less than that obtainable within the firm, no member of the collective would vote in favour of sacking, because this, according to the hypotheses of the model, would lead to a reduction in the expected average income of all partners.

Justification of a maximand such as this is not due to solidarity but rather is the consequence of the uncertainty that affects all members when the exclusion of some of them is decided by a chance draw (Steinherr and Thisse, 1979a, 1979b). Indeed, when redundancies are due to variations in market conditions rather than to causes ascribable to individual workers, the method of random choice, with equal probability of exclusion for all the members, seems to be one of the more plausible methods.

Some of the rules of functioning of the 'inegalitarian cooperative' introduced by Meade have a similar sense (Meade, 1972). They imply an extension of market regulations to relationships among members and find a remedy for the 'iniquity' that characterizes the original model of the self-managed firm. Very simply, they consist in the prohibition, imposed on the collective, of the exclusion of a single member against his/her will, to which is added a corresponding and analogous prohibition on individuals in the firm who may not leave it against the wishes of other partners. However, it is possible either for the partner or for the collective to try and come to an agreement with others, compensating the possible economic damage that may occur. On close examination, such norms of behaviour are like the logical rules of behaviour of the partners in corporations, present in most of the Western countries. The development of such rules together with other proposals introduced by the author will be dealt with in depth in Section 8.

Of a completely different tone, however, is the radical criticism by Horvat (1986), according to whom, principally, methodological considerations exclude the possibility of firing due to economic calculations. In fact, the anomalous functioning of the self-managed firm is derived from having utilized an objective function, held by the author to be invalid, in which labour is considered the short-term instrumental variable, and therefore perfectly variable, while capital is considered fixed.

In the self-managed firm, maintains Horvat, before arriving at the firing of partners, working hours could be reduced and only when the market changes are considered to be permanent would the number of the members be reduced. Similarly, recourse to overtime or external subcontracting would be the first response of the firm to signs of market expansion. All this implies that labour is fixed in the short term and, consequently, is adjusted only at discrete intervals of time, when the firm reviews its long-term plans. On the contrary, in every firm (whether self-managed or not) the process of investment and disinvestment is continuous and 'the value of capital does not remain the same even for a week' (Horvat, 1986, p. 13), and consequently the thesis of fixed capital in the short term is hard to maintain.

As with other contributions discussed below, the inversion proposed by Horvat, besides its practicability, serves to provide the self-managed firm with the ordinary characteristics of a capitalist firm, so long as it operates in a system of perfect competition.[4]

Finally, attempts to make the model of the self-managed firm more realistic have been made through the introduction of uncertainty regarding the market variables and above all in the price of output. It has been demonstrated[5] that the risk-averse self-managed firm reaches a higher productive level and employs a greater number of members than the risk-neutral firm, and in some cases may also have a greater productive level than the risk-averse capitalistic firm. This result is explained by the attempt of the firm to protect itself by attributing a higher probability to a reduction than to a rise in future prices. Once again, therefore, the functioning of the model implies that a reduction in the price of output, even if resulting only from the asymmetry of expectations, has an expansive effect on employment and production. Consequently, the positive response of the self-managed firm is directly proportional to price uncertainty and the productive level tends to fall when uncertainty decreases.

9.3 MULTIFACTOR AND MULTIPRODUCT FIRMS

The presence of other variable inputs besides labour, under certain conditions, can modify the conclusions of the model examined in the previous chapter. This was suggested by Ward himself in his original article and later confirmed by the literature that followed (see Bonin and Fukuda, 1986). Thus, as before, the behaviour of the self-managed firm will be examined observing its reaction to changes in market conditions (cost of the capital, assumed as fixed factor,

and price of the product), and the effect of these on output and employment identified.

As was demonstrated in Figure 8A.2 of the preceding chapter, an increment in the cost of capital leads to an increase in employment and output. However, in this case the effect of the increase in the number of member-workers on the marginal product of other variable factors should be taken into account. Under normal conditions there are no reasons to suggest that the increase in the quantity of labour has a negative effect on the marginal product of the other variable factors utilized in production. If this is true, the increase in the number of partners will increase the utilization of other variable factors, leading to an increase in output. In the case of an increase in the cost of fixed capital, therefore, the results of the basic model are confirmed.

On the other hand, when one considers an increase in the price of output, two opposing forces are juxtaposed. On one side, there is a tendency to contract production and employment, as has been seen for the firm with a single input, on the other, in contrast, a greater quantity of the non-labour variable factor should be employed given that its value marginal products are greater than its price. Naturally, an increase in acquisition of a variable factor implies an increase in output and consequently in employment. The final result, therefore, is indeterminate and depends on: (a) the degree of complementarity existing between labour and the other variable input; and (b) the performance of the marginal product of the non-labour input.

If, in fact, the variable input, by its nature or by the state of technology, is not a substitute for labour, but rather a strict complement, then an increase in its utilization will 'pull up' the demand for labour. Besides, if the marginal product of the non-labour input falls slowly with increased utilization, then the level of the demand for it will be maintained at a relatively high level and the possibility of an increase in the utilization of labour will become more concrete.

The uncertainty of the occurrence of such conditions and of their intensity does not allow the refutation of the conclusions of the basic model. It is possible, however, to affirm that the main implication of Ward's model, regarding the supply curve with a negative slope is not valid in the more general case (Vanek, 1970, p. 45).

Now let us come to the case in which production is diversified. In the presence of more than one output the increase in the cost of fixed capital continues to exercise a positive influence both on employment and on output, because, also in this case, the impetus to divide the fixed costs across a wider range of subjects does not disappear, given that one wishes to maximize the per capita income of the partner-workers. As for the firm with more than one variable input, the result of the basic model is confirmed also in this case.

The case of an increase in the price of one of the products is more complex. If this takes place it becomes worthwhile for the firm to move internal resources towards the production of the output whose price has increased, consequently reducing the production of other goods. Therefore, production of the good whose price has gone up increases, making its supply curve assume the customary upward slope. Thus, the opposite of what occurred in the monoproduct firm takes place. It should be noted, however, that the overall effect on employment is negative if, following the reasoning of the basic model, substitution between final products leads to an increase in the average price of the output and therefore a contraction in overall output, or in other words, if the increase in the production of the good whose price has gone up does not compensate for the fall in the production of other goods. As Domar (1966) demonstrates, a positive effect on employment may arise if: (a) the production of the good whose price has gone up is highly labour intensive; and (b) the marginal product of labour decreases slowly when output is increased.

Yet again, the results obtained from examining a situation only a little more realistic than that of the monoproduct firm modify, even if only partially, the results of the basic model.

9.4 THE ROLE OF THE EXTERNAL SUPPLY OF LABOUR: DOMAR'S CONTRIBUTION

In his 1966 article, Domar's starting point is the observation that Ward's model is unrealistic because it presupposes the possibility of variation of the number of partners in the short term, not taking into account the labour market situation and specifically of supply conditions. He introduces a labour supply curve into Ward's model in a manner which is consistent with the underlying assumptions, and considers various cases characterized, in the first instance, by differing degrees of attractiveness of the firm according to the existence or not of institutional constraints regarding the possibility of discrimination and labour redundancies.

Consider Figure 9.1. It is a simplified version of Figure 8.1B of the previous chapter. From the latter, in fact, only the value marginal product curves of labour (*pmgv*) and the average income of members are reproduced. However, two curves of labour supply, N_s' and N_s'' are added reflecting the two opposing situations of excess demand and supply of labour. Let us first examine the case of the supply curve N_s'.

If the egalitarian principle is valid, the level of employment is fixed at the point of intersection between the supply curve N_s' and the *rm* curve which assumes the role of the effective labour demand curve.[6] The intersection

occurs at A and therefore the number of partners will be set at $0N_1$, while average income is equal to N_1A. There are fewer employees than in Ward's model. In fact, if the labour supply curve is not taken into consideration, the number of employed members would be equal to $0N_3$, in correspondence with the point of maximum average income at E. However, in the new situation the functioning of the self-managed firm is no longer anomalous. An increase in the price of the product pushes the curves of average income and the marginal product of labour upwards, leading to an increase in employment and production. The reaction is similar to that of the capitalistic firm and the product supply curve assumes the customary positive slope. The reaction to an increase in the cost of fixed capital is rather different. In this case the marginal product of labour curve is not affected, while that of average income is pushed downwards and to the right. Consequently the point of intersection of *rm* with the labour supply curve tends to move downwards with respect to the starting point A. This implies a reduction of employment and production. In the capitalistic firm, however, such effects are felt only in the long run while in the short term nothing happens.

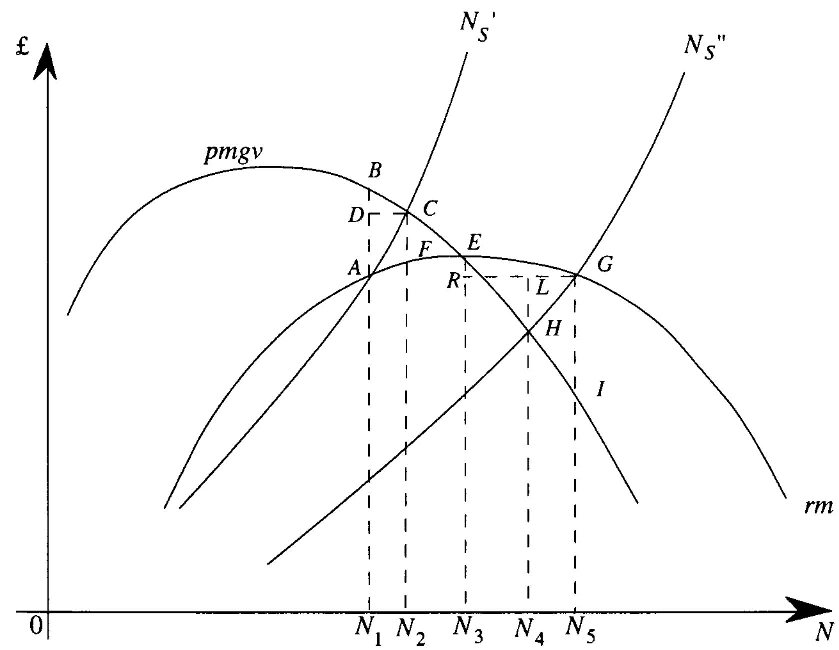

Figure 9.1 Introduction of the external supply of labour in the basic model

It is possible to see that at the point of equilibrium, A, the average income of partners (N_1A) is less than the value marginal product of labour (N_1B). This means that for them it would be worthwhile coopting new partners in order to increase the average income. This, however, is hampered by the position of the labour supply curve whose segment AC lies completely above the segment AF of the *rm* curve. In other words, the workers available on the market are not disposed to accept the wage that the firm is prepared to pay, but rather they demand a higher income that the firm is not able to guarantee for both the new and old partners at the same time.[7] Thus, the situation remains frozen at A so long as market conditions do not change (increase in the product price, reduction of capital cost, movement of the labour supply curve towards the right) or there is an increase in the physical marginal product of labour.

If it is possible to discriminate among workers, rewarding some with a predetermined salary, it is evident that it may be advantageous to all to increase employment up to $0N_2$. If we suppose that the additional workers (N_1N_2) are rewarded by an equal salary at N_2C, then the greater cost to the firm will be equal to the area of the rectangle N_1BCN_2. The additional revenue will, however, be greater because it corresponds to the area DBC, and consequently, there will be additional profit equal to the area DBC which might be distributed to the partners in the form of dividends. The additional waged employment would allow an increase in the incomes of partners above their original level N_1A.

In the case just examined, the employed labour force, therefore, is divided into two groups: partner-workers, rewarded by dividends, and employees who receive a wage. A difference between the rewards, in favour of wage workers might be socially justified by their possession of particular abilities or experience which the partners do not have. The earnings of the two groups, however, are internally homogeneous.

On closer examination, it might be advantageous to the partners to invoke further discrimination rewarding the wage workers differentially. This could happen, for example, in the case of the possession of differing professional qualifications. In this case, consider the extreme situation in which every additional employee is paid in relation to his/her position on the supply curve N_s', the additional cost to the firm would be equal to the area N_1ACN_2 while the greater profit to be shared by partners would be equal to the area ABC.[8]

In the two cases that have been considered, discrimination between partners and wage workers enables a better exploitation of the firm's potential in terms of increased employment and production. It must be emphasized, however, that we are far from the scheme of the self-managed firm suggested by Ward. The presence of wage workers and the abolition of equal pay constitute a fundamental violation of the presuppositions of the original model, which raises the question of whether such a firm may still be defined as self-managed.

Let us consider now the case of a greater availability of workers on the market indicated by the supply curve in the position N_s''.

The new supply curve intersects the *rm* curve at point G which corresponds to a number of employees equal to $0N_5$. But now, the intersection of the two curves takes place to the right of the point of maximum average income, E, eliminating the relevance of the curve N_s''. In fact, maintaining the presuppositions of Ward's model, even with the introduction of a supply curve, there is no incentive for the collective of the partners to increase employment up to level $0N_5$. If, by assumption, the initial situation is represented by point E with a collective composed of partners $0N_3$, they would have no incentive to coopt new workers, even if these are amply available on the market, simply because respecting the egalitarian rule would imply a reduction in their remuneration. In this specific case the new remuneration would be equal at N_5G for all partners with a loss equal to ER for the pre-existing partners. Similar considerations may be made if it is assumed that the initial situation is placed, for whatever reason, at G, with employment equal to $0N_5$. In such a case, only an institutional constraint might avoid the exclusion of workers N_3N_5 and the achievement of the point of equilibrium E where the income of the surviving partners is at a maximum. Obviously, in a situation of this kind an increase in the price of the product, also moving the *rm* curve upwards, would not induce any increase in employment, but rather would lead to its contraction, given the irrelevance of the supply curve N_s''.

9.5 THE CASE OF OVEREMPLOYMENT AND A COMMENT ON DOMAR

From the above discussion, it emerges that the introduction into Ward's model of an explicit labour supply curve with normal behavioural characteristics and shape is of importance only in the case of a limited supply of labour. In such a situation, the usual reactions of production and employment to variations of the price of the product are reinstated. However, if there is excess supply of labour – in the specific sense that once the level of employment that guarantees the maximum average income is reached,[9] there are still workers in the market available to offer their labour to the firm for a lower wage – then one returns to the conclusions of Ward's model.

The existence of institutional constraints on the firing of workers, on the other hand, would not prevent firms from improving average income by reallocating workers outside the firm. Let us take Figure 9.1 again, and suppose that initially employment is $0N_5$ with average income, N_5G. If the labour supply curve N_s'' is considered also as the locus of points indicating also alternative incomes available to individual workers outside the firm, then it is possible to see that workers N_4N_5 have a value marginal product, represented by the segment *HI* of the *pmgv* curve, which is less than both the remuneration within the firm and the potential income obtainable outside it given by the segment *HG* of the curve N_s''. This also signifies that being employed more efficiently outside, they do not have any incentive to leave the firm in which they are employed, because in spite of their modest productivity the compensation received by them is higher than the external alternative. Such a situation may induce the firm, which, plausibly, might wish to increase average income above the N_5G level, to place a group of workers outside the firm. As Domar himself shows, to achieve such an end, the collective should deliberate by majority the temporary transfer of workers N_4N_5 to other firms, collecting the wages paid by them.[10] The firm would then pay the external workers the dividend due to the partners who continue to perform their activities within the firm. If permitted by the institutional setup, such operations would be worthwhile provided that the wages received outside the firm were higher than the value marginal product of each externally allocated worker given, as has been seen, by the segment *HI* of the curve *pmgv*. Consequently, if compensation from outside was, for each worker, equal to the points corresponding to the segment *HG* of the supply curve N_s'', then the firm would receive revenue equal to the area N_4HGN_5 and would pay dividends equal to the area of the rectangle N_4LGN_5. If all the workers were employed within the firm, on the other hand, then workers N_4N_5 would provide a product equal to the area N_4HIN_5 at the same cost as the previous case. The firm through the external arrangement can therefore obtain an additional 'product'[11] equal to the area *HGI* that enables them to pay all partners with a dividend greater than N_5G.

As can be seen, therefore, Domar's contributions to Ward's model show the existence of the possibility of overcoming the anomalous behaviour of the supply curve of the self-managed firm, but also have some problematic aspects. Apart from the case in which the labour supply curve passes through point *E* in Figure 9.1, there is never a correspondence between the marginal product and the remuneration of labour. Consequently, to come to terms with the problem of suboptimality it becomes necessary, in the case of labour shortage, to discriminate among workers, considering some as partners and others as wage workers. Perplexities concerning this point have already been expressed and concern the reintroduction of wage labour, which in fact transforms the self-managed firm into a capitalistic firm. In the case of abundant labour supply, however, the contribution of Domar is relevant only if there are constraints on the firing of workers, requiring, in any event, the, by no means simple, reallocation of the labour force between firms to increase their efficiency.

In any case, Domar has the merit of having indicated the road towards the clarification of the importance of the criticism concerning the anomalous behaviour of the self-managed firm in the short term. The insufficient incisiveness of his contribution is due to the fact that he continues to consider the number of the partner-workers as perfectly variable in the short term without, however, taking into account that if the workers have assumed the entrepreneurial role, dedicating their life to the firm, most probably before modifying their number they would first vary the intensity of work, for example, changing its duration. This measure seems the most natural because it is immediate and non-traumatic, in as much as, in the case of a reduction in the labour force, it eliminates the numerous problems related to the choice of partners to exclude, which has been remarked upon many times in the literature. Moreover, it is perfectly consistent with the solidaristic and egalitarian aims which animate the principle of self-management.

In the same vein there are many other contributions starting with that of Berman (1977) and followed by Ireland and Law (1981 and 1982), Stephen (1984) and Giannola (1989b). These differ from Domar's original contribution in as much as, in the short term, labour supply is exclusively of internal origin.

9.6 EQUILIBRIUM WITH VARIABLE WORKING TIME

Now let us suppose that, in the short term, the self-managed firm considers as fixed not only the quantity of capital but also the number of partners and proposes to react to changes in market conditions by varying the intensity of effort of individual workers, which, for simplicity, is approximated by the number of hours of daily work. In this case, the level of overall satisfaction or utility of the worker is a positive function of earnings and a negative function of the number of hours of work. In formal terms we have:

$$U = U(y, l) \tag{9.1}$$

with $(\partial U/\partial y) > 0$, $(\partial U/\partial l) < 0$, and subject to the following constraints:

$$y = \frac{Xp_x - Kp_k r}{L}$$

$$X = X(L)$$

where y represents individual income, l the hours of work of an individual worker and L is the number of total hours of work by the collective composed of N workers ($L = lN$). If the partners agree to allocate the same quantity of work to all and consequently, to divide up the earnings in an egalitarian way, then the first constraint indicated above may be substituted by $y = (Xp_x - Kp_k r)/N$, a relationship already introduced in the previous chapter.

Maximization of (9.1) gives the first-order condition:[12]

$$\frac{\partial X}{\partial L} p_x = -\frac{\partial U/\partial l}{\partial U/\partial y} \tag{9.2}$$

from which it may be deduced that workers have an incentive to produce until the value marginal product equals the marginal rate of substitution between labour and profit, that is, until the revenue generated by the last hour of work is exactly equal to the income that partners require for that additional hour of work. Such a situation may easily be observed with the help of Figure 9.2. On the horizontal axis the hours of work are measured and on the positive part of the vertical axis the overall revenue of the firm is reported, assuming that all the partners have the same preferences, while the negative part shows the cost of capital which, as noted above, is fixed. The *AC* curve represents a standard value production function, while the segment *BC* identifies the curve of the overall income of the firm, since the fixed cost of capital is equal to the segment 0*A*. *II* is an indifference curve indicating the preferences of the collective.

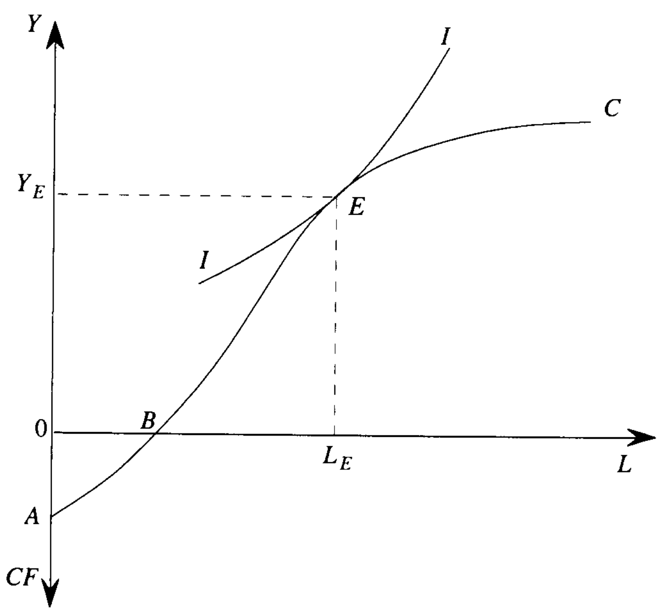

Figure 9.2 Internal supply of labour

The locus of points represents combinations of hours of work and income which provide the partners of the collective and therefore each of them with the same level of satisfaction. As is well known, the slope of the production function at a given point provides the marginal product[13] at that point whereas the slope of the indifference curve represents the marginal rate of substitution. At point *E*, the two curves are tangential, that is, they have one point in common where they have the same slope. At *E*, therefore, the value marginal product of work is equal to the rate of substitution between work and income and here the maximum possible utility is obtained, given the structure of the preferences of the collective. From Figure 9.2 it can be seen that, in equilibrium, the work provided by the collective will be equal to L_E hours with a total income equal to $0Y_E$.

It is easy to show that the equilibrium condition is entirely analogous to that found in the individual capitalistic firm in which a *trade-off* exists between attainable profit and the organizational and working efforts of the entrepreneur who dedicates all his/her working time to it.[14]

The situation that we have examined is one in which the partners are agreed over a timetable of work and a dividend equal for all. On close examination this assumption is both more natural and viable since the possible alternatives may create difficulties for the efficient allocation of labour and for the equilibrium of the firm. A valid alternative assumption might be to leave the choice of work effort to each single partner. In this case then it should be decided whether the remuneration should be made in an egalitarian way or on the basis of allocated labour (Sen, 1966). The remuneration based on need, of which the egalitarian remuneration is considered a valid approximation, respects the solidaristic principles of self-management, but when it is dissociated from an egalitarian division of labour, it can introduce some difficulties regarding the level of productive incentives. In a case of this kind, as it is possible to demonstrate formally, but which is in any case intuitively obvious, the partner has less interest in increasing his/her working effort, because the additional product derived from his/her greater effort will be divided with the other $N - 1$ partners and, therefore, the quota coming to him/her will be reduced to $1/N$ of the total.[15]

In the case of remuneration on the basis of effective labour, if the expectations of the single partner on the reactions of his/her fellow partners are *à la* Cournot, that is, if the worker who decides to increase his/her hours of work is convinced that the other partners would not modify their working efforts because of his/her decision, then the opposite problem to the above would arise. In fact, it is legitimate to suppose that every partner would be ready to contribute a superior quantity of labour than that necessary for the optimal functioning of the firm. In an attempt to increase their quota of utility, the partners would extend their hours of work beyond the point where the marginal disutility of work is equal to the marginal product of the same, determining a suboptimal allocation of resources and instability in the equilibrium of the firm (Berman, 1977).

Sen (1966) shows that these problems may be overcome, arriving at an efficient solution, if there is perfect agreement among partners on their hours of work, even if this varies across workers, and on the form of remuneration. But it is evident that a solution of this kind is essentially similar to the perfectly egalitarian solution (homogeneous hours of work and dividend) described earlier, whose fundamental characteristic is precisely the total collusion among partners. This, in fact, seems to be the only practicable solution or, at least, as Berman in his work cited above shows, is the only one which ensures Pareto efficiency when the expectations are *à la* Cournot.

In the case of a different expectational structure, that is, if the subject who decides autonomously to contribute some additional hours of work expects the same behaviour from other partners, there is still notable discordance in the literature about the conditions of existence of an efficient solution. In the following, therefore, attention will be limited to the analysis of the self-managed firm in which, following the agreement among partners, hours of work and the division of dividends occur in an egalitarian way.

9.7 EQUILIBRIUM WITH VARIABLE WORKING TIME: VARIATIONS IN MARKET CONDITIONS

Now we should ask, if variations in the market conditions occur, what happens to a self-managed firm functioning in the way described in the last section. First of all, let us suppose that it faces an increase in the cost of capital. It was seen in the previous chapter that in Ward's original model, this kind of variation leads to an increase in output and the quantity of utilized labour which, in that case, since working time was assumed to be constant, implied an increase in the number of employed workers. In the situation that we are dealing with now, in which the possible variations of supplied labour concerns, in the first place, hours of work, the result depends on the assumptions made concerning the preferences of the partners, that is, how much income they require in order to supply an additional hour of work (Ireland and Law, 1981, 1982).

An increase in fixed costs leads to a contraction in the overall income of the firm and consequently of each single partner. The situation is shown in Figure 9.3 where the horizontal axis measures the hours of work of the collective while, as in Figure 9.2, on the positive part of the vertical axis the income of the firm and on the negative part the cost of the capital are measured. Initially, the latter is at the level $0A$ and given the value production function AB and the preferences of the collective represented by the indifference curve $I'I'$, the

equilibrium point is given by E' with a quantity of work equal to $0L'$ hours and overall income of $L'E'$ to be divided in equal parts among the workers. Now let us suppose that the cost of the capital increases by an amount equal to AA'. As the cost of the capital is fixed for all levels of production, its increase may be represented by a downward shift of the whole of the AB curve. Therefore, for each of the possible number of hours worked, profits will be reduced by an amount equal to AA'. If there is no income effect on the labour supply of partners, the quantity of work allocated remains the same. This assumption implies a particular structure of the map of indifference curves all of which, in this type of case, are vertically parallel. This signifies that for different possible levels of income, the partners always ask for the same additional quantity of income to provide an hour's additional work. In Figure 9.3 the indifference curve $I''I''$ represents a situation of this type since it is vertically parallel to $I'I'$ and the shift from the original point of equilibrium E' to the new point E'' does not cause modifications in labour supply, which remains at the level $0L'$.

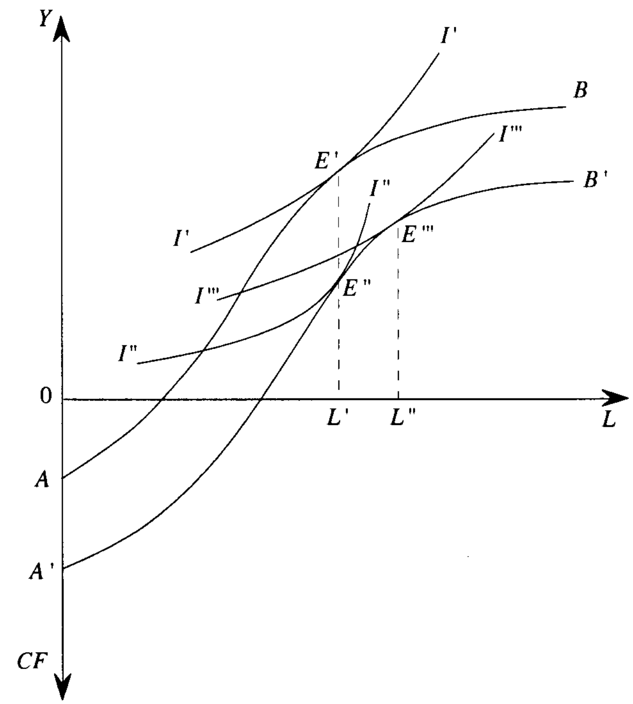

Figure 9.3 Effect of variations in fixed costs on internal supply of labour

A more realistic assumption on the form of preferences would imply that an increase in the cost of capital, by reducing income, leads to a willingness of the partners to offer additional hours of work for a lower reward than required before the increase in the cost of capital. In geometric terms, this assumption requires the existence of indifference curves whose slope declines (for each value of *L*) with income. Such a situation is represented in Figure 9.3 by the curve *I'''I'''*, which is tangential to *A'B'* at the point *E'''* where the work offered by the collective increases to 0*L''*. The existence of an income effect sees to it that an increase in the cost of the capital leads to an increase in hours of work and therefore output. As a consequence of the greater importance of income with respect to leisure, in this case, in comparison to the situation characterized by vertically parallel indifference curves, collective and individual income increases (*L'E'''* > *L'E''*).

Now let us consider an increase in the market price of the product. Also in this case we will at first assume the existence of vertically parallel indifference curves (Ireland and Law, 1981, 1982), that is, the absence of an income effect, subsequently moving on to the more general case.

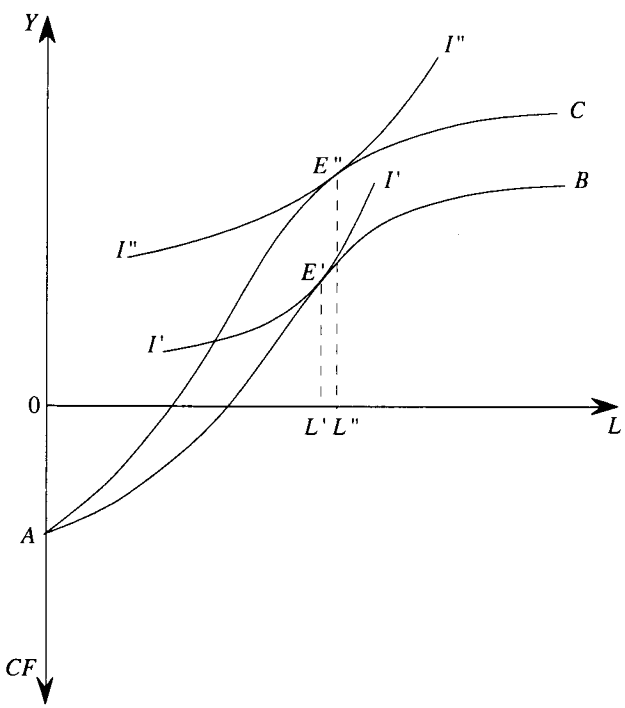

Figure 9.4 Effect of variations of price on employment when income effect is absent

Figure 9.4, where the axes are as before, represents an initial situation in which the equilibrium point *E'* is derived from the point of tangency of the value production function curve *AB* with the indifference curve *I'I'*. Hours of work, therefore, are equal to 0*L'*. An increase in the price of the product leads to an upward rotation of the value production function, which shifts from the position *AB* to *AC*, so that each point of *AC* will have a greater slope with respect to the corresponding point of *AB* situated on the horizontal axis. This implies that the indifference curve *I''I''*, representing the vertical shift of *I'I'* must be tangential to *AC* at a point to the right of *E'* and *L'*. In such a case, therefore, an increase in the price of the product determines an increase in labour supply and in output.

The reason for which the assumption that vertically parallel indifference curves always lead to an increase in employment, following an increase in the price of the product, is very simple. If the possibility that an income effect is excluded – the consequence of the specific assumptions on the structure of preferences – then only the substitution effect will operate. We know that in the self-managed firm an increase in the price of the product corresponds to a higher remuneration of labour. Consequently, with unchanged preferences of partners with respect to higher levels of income, there will be an incentive to increase individual labour supply, simply because now the remuneration is higher.

Let us see what happens in the more general case, when the possibility of changes in preferences with respect to increasing levels of income is introduced. Since leisure may legitimately be considered a 'normal' good, following an increase in the price of the output that leads to increased income, partners will require a higher level of remuneration with respect to the earlier situation. In geometric terms this means that the slope of the indifference curves will (for a given level of labour supply) increase with income. The immediate consequence of this is that the effect of an increase in the price of product on labour supply is indeterminate.

The substitution effect always tends to raise supply because in any case leisure now becomes more costly. In contrast, the income effect tends to have the opposite effect because the greater availability of income leads to an increase in the income required by workers for an additional hour of work. The overall impact on labour supply will depend on the relative sizes of the two effects. The case in which the income effect is larger is shown in Figure 9.5. Starting from the equilibrium situation *E'* in which the curve of the value production function *AB* and the indifference curve *I'I'* are tangential, an increase in the price of the product leads to a rotation of *AB* until it reaches the position *AC*. The higher indifference curve tangential to *AC* is now *I'I'* and the new point of equilibrium is *E''* with a level of employment equal to 0*L''* inferior to the initial level 0*L'*. The contraction of working hours is due to the two effects already mentioned. They have opposite signs and can be measured. To evaluate the size of the substitution effect it is sufficient to shift the curve *AC* downwards till the point of tangency is found with the earlier indifference curve *I'I'*. In this way the income effect induced by the increase in price is annulled.

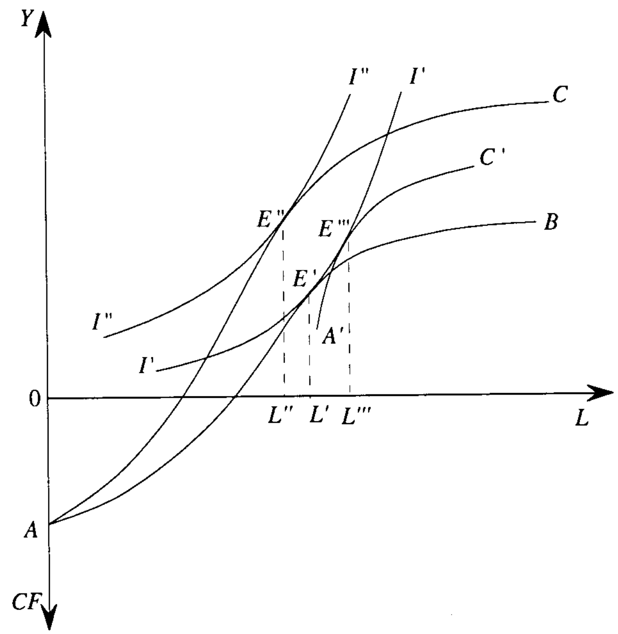

Figure 9.5 Effect of variations of price on employment when income effect is stronger than substitution effect

In Figure 9.5 the curve *A'C'* which represents the relevant part of the curve *AC* shifted downwards is tangential to *I'I'* at *E'''*. Therefore, the substitution effect alone would have led to an increase in the internal supply of labour equal to *L'L'''*. In the case considered, the income effect, following the variation of preferences of the partners in the new situation, more than compensates for the substitution effect, leading to a reduction of the working hours equal to *L'L''*. The income effect, therefore, is responsible for the reduction of the labour supply from 0*L'''* to 0*L''*. The case illustrated in Figure 9.5 is an extreme one where a weak substitution effect and a strong income effect are at work. Naturally, it is possible for the opposite to occur with a positive final result on internal labour supply. This situation is shown in Figure 9.6 in which the substitution effect is larger than the income effect (*L'L'''* > *L''L'''*) and

consequently the final result is an increase in the supply of working hours from 0*L'* to 0*L''* with a relative increase in production.

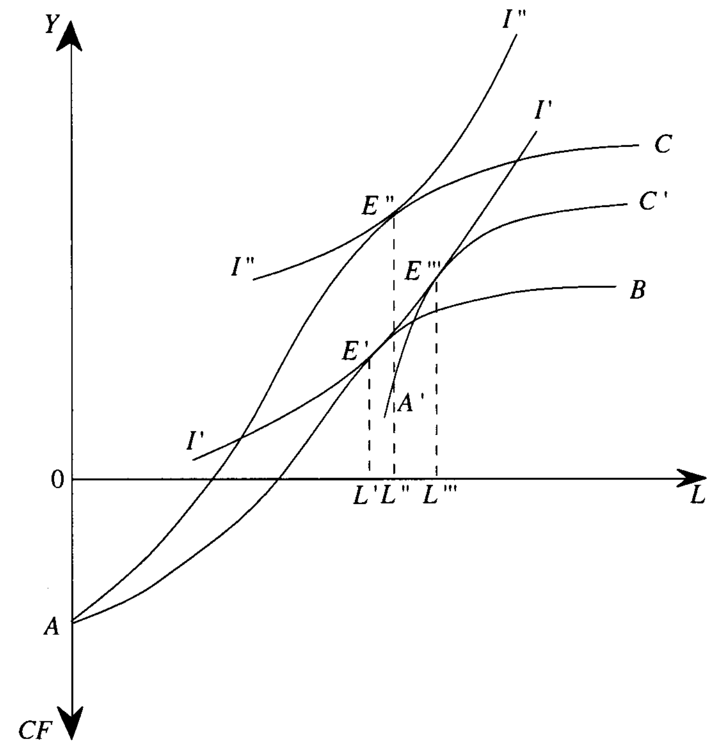

Figure 9.6 Effect of variations of price on employment when substitution effect is stronger than income effect

The conclusion to be drawn from what has thus far been said is that the contributions of Sen, and above all of Berman, in common with Domar, have increased the realism of Ward's original model and have removed the 'perverse' product supply curve of the self-managed firm. The results we arrived at may thus be summarized. When the objective function of the partners who have constituted the firm becomes a little more complex and takes into consideration not only the attainable income from productive activities but, as seems entirely logical, also the effort to attain it (and, consequently, the intensity of work becomes an endogenous variable), the conclusions of Ward's model are no longer valid. We have seen that when the more general case is considered, where both substitution and income effects are present, the reaction of the firm to an increase in the price of its product may be either an increase or a decrease in labour supply, according to the structure of the partners' preferences, without there being any logical basis for expecting the likelihood of contraction to be greater than that of expansion. Finally, an increase in the fixed price of capital, in the more general cases, leads to an increase in the supply of working hours.

It is worth remarking on the fact that, according to the model of functioning of the self-managed firm, even with the already mentioned modifications, the reaction of the firm in the face of a variation in the product market price is indeterminate. Is this a weak point of the firm of which we speak? In reality, what has been said in this section about the self-managed firm may be extended not only to the individual or small collective capitalistic firm[16] without employees, but also to all those firms, with employees and therefore of larger dimensions, in which the owners of capital perform the entrepreneurial function. In these cases it may be assumed that they have an objective function which is entirely similar to that of the partners of the self-managed firm. In fact it is sufficient, in equation (9.1) above, to substitute the variable l indicating the hours of work with a variable indicating the hours dedicated to organizational activity (Giannola, 1989b). With an assumption of this kind, the functioning of the capitalistic firm would coincide with that of the self-managed firm analysed above, and therefore, the presumed anomalies of the latter would be the same as of its capitalistic 'twin'. The fact that these anomalies have only rarely been noted in the context of the capitalistic firm (Scitowsky, 1943), despite the fact that they concern the huge majority of small and medium-sized enterprises, does not mean that they are not relevant when comparing the two types of firms.[17]

9.8 MEADE'S 'INEGALITARIAN COOPERATIVE'

Meade starts from the suggestion that the way in which capitalistic and self-managed firms are compared in Ward's original model is inappropriate (Meade, 1972). Leaving aside the other characteristics of the two kinds of firms, it is not correct to compare the self-managed firm, in which a rigid egalitarian constraint is present with the corresponding capitalistic firm which, in the case of an expansion of its structure, discriminates between old and new partners, treating them differently in terms of dividends and decision-making power.

For Meade the appropriate comparison would be between the self-managed firm and a hypothetical capitalistic firm (*joint-stock*) in which the owners of the capital initiate a productive activity bringing together machines owned by them, which for the sake of simplicity we assume to be equal, and employing

labour at the market wage. The objective function of the partners is the maximization of income per machine while the short-term control variable is the number of employed workers, capital being fixed. In a situation of perfect competition, this type of firm is perfectly efficient because capitalists increase production, employing new workers, to the point where the value of the marginal product of labour is equal to the market wage rate.[18] Such a firm is egalitarian, because, as occurs in Ward's workers' cooperative, there is no possibility of discrimination among the partners: in the joint-stock company the division of income per machine[19] is carried out in the same way as the division of income per worker in the labour cooperative.

However, in the capitalistic world, according to Meade, the equality of treatment of partners is reduced when the basis of the distribution of profits changes from physical capital to a more realistic one proportioned according to the quota of financial capital. For the sake of simplicity, supposing there is an absence of indebtedness and all the physical capital is financed by the sale of shares, then a new issue of such shares will be made as long as the return on the physical capital is greater than the dividend to be paid on the shares, that is, in more precise terms, up to the point where the value marginal product of capital is equal to the return of the shares. This happens because in the joint-stock company the cost of the capital is composed of the dividend which will be paid on shares, which coincides with their return, z. Following the demonstration by Meade, the latter is given by:

$$z = \frac{p_x X - wN}{p_s S} \tag{9.3}$$

where p_s indicates the price of a share and S represents the number of shares in circulation, while the other symbols have been defined above.

If p_k is the price of the physical capital, it is worthwhile for the firm to issue shares up to the point where $(\partial X/\partial K)p_x = zp_k$. Substituting this into equation (9.3) and multiplying the numerator and denominator by K, one obtains

$$\frac{\partial X}{\partial K} p_x = \frac{p_k K}{p_s S} \; \frac{p_x X - wN}{K} \tag{9.4}$$

from which it is evident that the decision to increase capital depends on both the size of dividends to be distributed per machine $[(p_x X - wN)/K]$ and the ratio between the value of physical capital and the value of shares in circulation $(p_k K / p_s S)$. In fact, in this case an increase in the price of the shares p_s reduces the value of the ratio on the right-hand side and so has the same effect of a reduction in the cost of capital, thereby triggering the issue of new shares.

On the contrary, in the 'joint-stock' company there is an increase in capital which in this case means an enlargement of the collective to new owners of physical capital up to the point where the value marginal product of the capital is equal to the profit per machine (see note 18), that is, to the point where:

$$\frac{\partial X}{\partial K} p_x = \frac{p_x X - wN}{K}.$$

The difference, therefore, lies in the fact that while in the 'joint-stock' company an increase in capital depends only on the return to physical capital, in the share-holding type of firm, it also depends on the market value of shares which bears no relation to the value of physical capital. Consequently, as has already been seen, if for any reason the price of shares rises, while the return to physical capital remains constant, it may be worthwhile increasing the capital by admitting new partners. They will buy shares of the physical capital at a higher price than that originally paid by the old partners. That is, for a given financial contribution they would possess a more limited quota of physical capital. This implies, naturally, that for equal contributions they receive less profit and have less decision power than the old partners.

For this reason, the most common form of capitalistic firm is considered non-egalitarian by Meade and is therefore not directly comparable with the self-managed firm unless the latter is similarly non-egalitarian. Thus the 'inegalitarian cooperative', in which every partner is a holder of a number, q, of securities, which for simplicity we will continue to call shares. Its objective function is represented by the maximization of the return d for every share, that is by:

$$Max \quad (d) = \frac{Xp_x - Kp_k r}{\sum_{i=1}^{N} q_i}$$

in which the numerator is the same function (8.1) of the previous chapter and indicates the overall profit of the firm while q_i represents the number of shares possessed by partner i, and N indicates the number of partners.

In this type of firm, every partner has a different number of shares depending on his/her abilities and the period of membership of the firm. This signifies that the more qualified and more experienced partners will receive higher dividends than the less skilled and more recently admitted ones. Given this is the situation, it is possible to derive the rules of functioning of the firm.

It is easy to observe that to the collective it will be worthwhile admitting new partners when the value of the marginal product of labour is greater than the dividend to be paid to them, on the basis of the new shares to be issued. On the other hand, for the new partners, it will be worthwhile entering the firm if the obtainable dividend is greater than that attainable elsewhere. Therefore, the new partners would be admitted when:

External reward < Dividend < Value marginal product of labour.

Now let us suppose that there is a reduction in productivity in the firm so that the dividend paid to the marginal (least efficient) partner becomes greater than the value of his/her product. All the other partners have an incentive to exclude him/her from the firm but, as we know, nobody can be excluded against his/her will. In this case, if he/she is able to obtain a remuneration externally that is greater than the dividend received in the cooperative, that is, if the following condition occurs:

External reward > Dividend > Value marginal product of labour

then it is reasonable to suppose that the partner will leave the firm of his/her own volition, to everybody's advantage.

If, on the contrary, remuneration obtainable externally is less than the firm's dividend but is greater than the marginal product of labour, that is, if:

Dividend > External reward > Value marginal product of labour

then the less efficient partner will have an incentive to remain with the firm while for the other members of the collective his/her exclusion would be advantageous (because, from what has been said, his/her product is less than his/her dividend). In this case, there would be an incentive for the partners to compensate the loss that their companion has to bear in leaving, because their earnings will increase by more than the difference between his/her attainable external income and his/her marginal product.

In the last possible case the obtainable income from outside is superior to the dividend paid by the firm to the marginal partner, but his/her product is higher than his/her dividend, that is:

External reward > Value marginal product of labour > Dividend.

In other words the partner earns less than would be obtainable elsewhere and he/she also produces more than he/she earns. In this situation it would be in his/her interests to leave the firm but not in the interests of his/her companions because they would suffer a reduction in their dividend. Since it is not possible to withdraw without the consensus of the collective, also in this case the partner who wants to leave the firm is able to compensate the other members of the collective for their reduced dividend. After this operation he/she will receive an increment in his/her income equal to the difference between external remuneration and his/her marginal product.

In an economic system composed of 'inegalitarian cooperatives', the possibilities of adjustment guarantee the achievement of full allocative efficiency even in the short term, since, in contrast to the self-managed firm of Ward, there is now perfect mobility of labour between different cooperatives and, therefore, resources can be transferred to firms and sectors in which they are better remunerated.[20]

9.9 CONCLUSIONS

The substantial literature which has followed Ward's 1958 article, the bare outlines of which have been mentioned in this chapter, has put in doubt the conclusions of the original model on the functioning of the self-managed firm. The negative slope of the supply curve is just the consequence of the restrictive assumptions underlying the model. In fact, in the course of this chapter it has been seen that when such assumptions become more realistic the rigidity which the self-managed firm is accused of is mitigated and in some cases disappears completely. It was Domar who first clarified that it is necessary to take labour supply into account while Sen and above all M.D. Berman, followed by other economists, modified and qualified Domar's contribution, introducing into the analysis a trade-off between the quantity of labour to be allocated and the level of attainable income. According to Archibald, the decisive contribution in this regard against the 'perverse' result came from Miyazaki and Neary (1983; see also Archibald, 1992, pp. 110–11).

The introduction of the disutility of labour into the objective function is particularly relevant in those cases in which the supplier of labour is free to determine the intensity of his/her effort, or in approximate terms, to choose the hours of work to be offered. The partner of the self-managed firm is in a situation that, in some ways, is similar to that of an autonomous worker or the capitalist entrepreneur who owns his/her firm, assuming that for the latter the organizational effort or entrepreneurship may be considered something like a job. In these circumstances, therefore, there exists a process of continuous evaluation of the costs of allocating additional of work in relation to the benefits of increased income. This ensures that the anomalous behaviour found in the original model disappears or, at least, as has been seen, has the

same probability of occurring as in the capitalistic firm of smaller dimensions, in which property and control coincide.

NOTES

1. These hypotheses are confirmed by empirical research which, although it has not produced completely satisfying results, has shown that, in some cases, the members of a cooperative tend to pay more attention to job security than to income (Berman, 1977). In the same vein, with the help of the estimation of the parameters of a general function, attempts have been made more recently to show that employment has a right to be included among the variables in the objective function together with the level of income, the latter being qualified by an adequate consideration of the disutility of labour (Craig and Pencavel, 1992).
2. For reviews of the criticisms of the basic model, see Abell (1983), Fanning and McCarthy (1986) and Leete-Guy (1991).
3. Rightly, the 'perverse' outcome which is being discussed has been adjudged 'completely ridiculous' (Moene, 1989, pp. 85–7).
4. With an objective function in ratio form, with fixed labour and variable capital in the short term, the maximization of income per worker leads to full allocative efficiency in the short term only in the case of perfect competition. However, some problems persist in the case of monopoly (Meade, 1972). Horvat, in fact, leans towards an objective function that is entirely similar to that of the capitalistic firm, that is, which tends to the maximization of overall profit. For a criticism, see McCain (1986).
5. Among the more relevant contributions, see Muzondo (1979), Bonin (1980), Hey and Suckling (1980) and McCain (1985).
6. In fact, Domar assumes that equilibrium is achieved in two phases: first, the firm identifies the points that maximize per capita income for each level of employment, thus obtaining the *rm* curve; subsequently, it places itself at the point of intersection between this curve and that of labour supply, thus determining the number of employees (Meade, 1966, p. 742).
7. Remember that we are considering the case in which the egalitarian principle is strictly in force and consequently the reward to the last coopted partner must be equal to that of all the others.
8. Domar (1966) considers also the case of the firm in a position of monopsony. In such a situation, the additional employment will be inferior to N_1N_2 and the (uniform) wage in return will fall in the interval between N_1A and N_1D with $N_1D = N_2C$.
9. In the case of Figure 9.1 this level is equal to $0N_3$.
10. Therefore it is a form of 'hiring' of labour where the firm has the role of intermediary.
11. This is, more precisely, additional revenue due to the allocation of workers outside the firm.
12. Taking into the account the indicated constraints and the fact that $L = lN$, (9.1) is differentiated with respect to l and set equal to zero. The following equation is thus derived:

$$\frac{\partial U}{\partial y}\frac{\partial y}{\partial X}\frac{\partial X}{\partial L}\frac{\partial L}{\partial l}+\frac{\partial U}{\partial l}=0.$$

From the preceding equation, given that $\partial y/\partial X = p_x/N$ and $\partial L/\partial l = N$ by substitution and rearrangement one obtains (9.2).

13. In the case under consideration, we are referring to the marginal product of labour.
14. In fact also in this case the utility function (9.1) continues to operate, remembering that now y represents overall income while, given the nature of the firm, the constraint will have the following form:

$$y = Xp_x - Kp_k r.$$

Bearing in mind that, in the short term, output depends only on the quantity of utilized labour, that is $X = X(l)$, (9.1) must be differentiated with respect to l and set equal to zero, in order to derive the first-order conditions. Thus one obtains:

$$\frac{\partial U}{\partial y}\frac{\partial y}{\partial X}\frac{\partial X}{\partial l} + \frac{\partial U}{\partial l} = 0$$

from which, remembering that $\partial y/\partial X = p_x$, one finds that:

$$\frac{\partial X}{\partial l} p_x = -\frac{\partial U/\partial l}{\partial U/\partial y}$$

which is identical to the equilibrium condition of the self-managed firm represented by (9.2), if one takes into account that, in the individual capitalistic firm, $l = L$.
15. In this case the function maximized is still (9.1) with the constraint $y = (Xp_x - Kp_k r)/N$. But now, provided that hours of work are not constant across workers, we will have $L = l_1 + l_2 \ldots + l_N$ and supposing that there is no reaction on the part of the collective to the increase in the working time of a partner, it follows that $\partial L/\partial l_1 = 1$. Differentiating (9.1) with respect to l_i and setting the result equal to zero one obtains:

$$\frac{\partial U}{\partial y}\frac{p_x}{N}\frac{\partial X}{\partial L} + \frac{\partial U}{\partial l_i} = 0$$

from which one finds:

$$\frac{1}{N}\frac{\partial X}{\partial l} p_x = -\frac{\partial U/\partial l_i}{\partial U/\partial y}.$$

In this case, therefore, the partner will have an incentive to supply his/her labour to the point where the marginal rate of substitution is equal to $1/N$th of the marginal product of labour and not to its whole value.
16. On the individual type of firm, see note 14 above.
17. On the way in which cooperatives in the Western world react to economic crises, see, for example, Whyte (1991, pp. 89–95).
18. In formal terms the objective function of the 'joint-stock' company is the following:

$$\underset{N.K.}{Max}\, y_k = \frac{p_x X - wN}{K}$$

with the short-term constraint that the level of output, X, depends only on the number of workers N. The first-order conditions are given by $(\partial X/\partial N)\, p_x = w$, for labour and $(\partial X/\partial K)\, p_x = (p_x X - wN)/K$, for capital, bearing in mind that, in the short term, since capital is fixed, only the first of these conditions is relevant. This is identical to that of the capitalistic firm (see Section 5 of the last chapter). In the long term, when the second condition also comes into play, an expansion of capital occurs up to a point where its value marginal product is equal to the average income per machine.
19. Meade's 'joint-stock' company is in some ways similar to the 'cooperative of capital' analysed by Dubravcic (1970) who tries to show that the anomaly of the self-managed firm does not come from the role of the 'entrepreneurial input' assumed by labour, but is the consequence of the structure of the objective function, which has the form of a ratio. Both the 'cooperative of capital' and the 'joint-stock' company are firms founded by the owners of capital who bring together similar types of physical capital and share profits on the basis of units of physical capital. The common characteristic of the two firms, however, ends here. Meade, as has been seen, shows that his 'joint-stock' company, at least in perfect competition, has optimum behaviour from a Paretian point of view, also in the short term. Such a characteristic is guaranteed by the fact that labour remunerated at the market wage is variable in the short term while capital is fixed. In contrast, in Dubravcic's 'cooperative of capital', if, as the author affirms, it has to be a perfect mirror-image of the labour cooperative, the factor that takes up the entrepreneurial role, that is capital, must be considered variable in the short term while the opposite is true of labour. Only in this case, in fact, can it be shown that the behavioural anomaly depends on the structure of the maximand. Interpreted in this way, as seems to be agreed in the literature (see, among others Horvat, 1986, and Giannola, 1989b), the cooperative of capital has the same objective function as the 'joint-stock' company (see note 18) but with a different short-term constraint: adjustment of production may take place now only by varying capital because labour is fixed. The first-order condition valid in the short term is relative to capital: $(\partial X/\partial K)\, p_x = (p_x X - wN)/K$. Now this has the same structure as the first-order condition valid for the labour cooperative and produces the same anomalies. On the contrary, if one insists on maintaining that short-term adjustments are possible only by variations in labour, the 'cooperative of capital' and the 'joint-stock' company, as Meade shows in relation to the latter, will always behave differently from the labour cooperative.
20. For an argument which contradicts Meade's thesis, see Giannola (1989b) who maintains that removal of the egalitarian rule does not ensure the elimination of the anomaly in the supply curve.

10. Self-managed firms and underinvestment

10.1 INTRODUCTION

In the preceding chapters we were engaged with the age-old debate about the 'anomalous' behaviour of the self-managed firm in the short term. However, studies of self-management have dwelt upon a further problem that arises when one moves from the short to the long run and introduces the question of the accumulation of capital into the analysis. The self-managed firm will have, according to a part of the literature, a tendency to underinvest compared to its capitalistic 'twin'. There are various reasons for such behaviour and they have been dealt with by analyses which are partial and often refer only to one type of self-managed firm and then generalize the conclusions.

There are essentially three causes of underinvestment suggested in the literature and they are closely interconnected. Therefore, their separate discussion is a simplification due only to the reasons of analysis and exposition.

The first, which takes up one of the oldest criticisms of the self-managed firm, is related to the problem of guarantees for third parties financing investments. It concerns the 'labour-managed firm' (see Chapter 8, Section 2) but particular aspects of the issue are of relevance to other forms of self-managed firm as well. For such a purpose the problem of the commitment of partners (Schlicht and von Weizsäcker, 1977) with regard to the firm is raised and it is maintained that if capital is financed wholly from outside nothing obliges the partners to be interested in the fate of their firms unless there are norms imposed from outside or mechanisms to check the mobility of labour or the possibility of selling the position of partner.[1] It will be difficult, therefore, for the firm to find the necessary financing. The problem of commitment will be discussed in the next chapter.

The second reason for underinvestment, which has been discussed more, is linked to the question of property rights and the limited time horizon of partners, and it has been analysed initially by Pejovich and Furubotn, and separately by Vanek. This is based on the fact that the partner of the self-managed firm, not having the right of refund of his/her capital share at the time of his/her withdrawal from the firm (the implicit reference, therefore, is to a 'worker-managed firm') in certain circumstances will be opposed to the firm's

investment. In this type of firm every investment must be preceded by a choice of self-financing[2] which in turn means a reduction in the dividends paid to partners. The latter or at least some of them will always vote against any proposal of (self-financed) investment if they are to gain only a part of the income flow[3] generated by it, due to their time horizon being limited to the date on which, for whatever reason, they leave the firm. This condition, however, is necessary but not sufficient for their disagreement over investment. To justify their choice it is necessary that the part of the return which they receive does not cover the (self-financed) invested capital plus market interest.

This reason for underinvestment is called the '*Furubotn–Pejovich effect*'[4] and, as has been said, concerns the impossibility for the partner, in certain cases, to be able to recoup the self-financed capital invested in the firm. This may provoke a loss to an outgoing partner, arising from an operation of more or less recent self-financing.

The problem of the time horizon with reference to various types of self-managed and capitalistic firms will be discussed in Sections 2 to 9.

The last reason for which the self-managed firm may have difficulty in investing is related to the exigencies of capital protection, which are felt particularly strongly in this type of firm because of the peculiarity of property rights. In this case the implicit reference is to the LMF. In the literature the problem arises from the institutional questions related to the matters of the Yugoslavian firm and was raised initially by Furubotn and Pejovich (1970b). According to some interpretations, the self-managed firm should have a particular obligation to maintain the accountable value of the investment or to prohibit disinvestment or even to have particularly burdensome forms of capital goods depreciation. All this would mean that investments which for capitalistic firms, not subject to any obligation, other than the obvious one, for the allocation of the cost of the use of capital according to its contribution to the productive process, would be convenient and feasible, would be unattractive to the self-managed firm. The problem of depreciation regarding various types of self-managed firms will be discussed in Section 10.

10.2 THE CASE OF THE CAPITALISTIC FIRM

In the 'profit-maximizing firm' (PMF) the time horizon of the partner (shareholder) may be considered unlimited because if financial markets are 'perfect' every operation made in the firm would reflect on the value of the shares. Possible investments, financed in whatever manner, as long as considered appropriate by the market, will involve an increase in share prices, independent of the duration of investment. Consequently the partner may choose either to enjoy greater future dividends or to give up the share and realize the actual value of the expected future income flow. The choice will depend exclusively on the difference between his/her intertemporal preference rate and the rate of interest with which the market discounts the flow of future dividends. In principle, and apart from possible specific constraints, he/she will never be conditioned in his/her choices (if he/she has any decision power) by the duration of the investment.

In order to make a marginal investment of one monetary unit it will only be necessary that:

$$\sum_{t=1}^{T} r_t(1+i)^{-t} = 1 \qquad (10.1)$$

in which r_t is the annual future return, taken as constant, generated by the investment, calculated gross of depreciation and net of other operating costs related to it, T is the duration of investment (it is supposed that the investment of one monetary unit made at the end of the current year would imply an increase, equal to r, in the future income of the firm for T years) and i represents the market interest rate.

In other words, for the partner the possibility of selling the quota of participation in the firm (shares), realizing the capitalization of the flow of future income is the same as making his/her time horizon equal to at least T, for any and, therefore, virtually infinite investment. In the next section we will see that for the self-managed firm the same is not true.

10.3 THE WMF AND THE PROMINENT INTEREST RATE

The question of underinvestment, related to a limited time horizon, was raised for the first time by Pejovich in 1968[5] and since then has been presented in numerous articles by him and Furubotn.[6] In a WMF at the end of any administrative period partners have to decide how to divide the gross profit between withdrawable income and investments.[7] The original one-period model introduced by Ward had as its objective the simple maximization of short-term profit and by its nature excluded any considerations of investment. Instead, the cited authors tried to show that the behaviour of partners is rational if, considering a time horizon of more than a year, part of the profit is devoted to the internal financing of investment with the objective of maximizing the present value of future income.

It is assumed that, at the end of the year, partners have collectively to decide about the destination of profit. They must fix the quantity of income which is withdrawn by dividend and, by default, the level of self-financing. This

decision is equivalent to the choice of the allocation of saving between the financing of the firm's assets and the outside investment in government bonds or bank saving accounts. Consequently, the single member's vote will be decided by the comparison between the expected rate of return r on the firm's assets, which will be realized with that financing, and the rate i obtainable on financial markets. So it becomes important to examine the particular significance of the rate of income r.

Among the institutional characteristics of the WMF is the impossibility, on the part of partners who leave the firm for whatever reason, of obtaining a refund of the profit devoted in the past to self-financing. Their property rights, as has been said, are reduced, since they are limited to the right of use of capital (Furubotn and Pejovich, 1970a). Consequently, if a partner who has contributed to the financing of an ongoing investment, thus accepting a reduction in obtainable profits, leaves the firm, he/she may suffer a loss equal to the difference between the reduction of the dividends and the returns on the investment already obtained and withdrawn.[8]

For the investment to be made it is necessary that a majority of partners think they will stay with the firm for a sufficient number of years to recover the profits not withdrawn for reasons of self-financing. Considering the case examined in the last section, the annual income flow r in (10.1) should now be discounted not for the period T but for a period n, equal to the number of years that the majority of partners will stay with the firm, if this is less than T. Naturally, each partner will generally have a different period of permanence and consequently their positions would have to be valued individually. But which single time horizon would be used for the choice of investments?

It is easily possible to see that, in this regard, the time horizon of the partner who has the median position in the collective as a whole becomes important.[9] Consider Figure 10.1, where three different self-managed firms are represented characterized by different distributions of workers by age. On the vertical axis of the diagram is the relative age of partners in such a way that 0 corresponds to the youngest partner while P corresponds to the partner who is about to leave the firm because of the age limit.[10] The range of variation $0P$ is assumed to be equal for all the three firms. On the horizontal axis there is the number of partners in increasing order of age. The bisection of the segment $0N'$ gives us point M which is relevant because it identifies the median partner, that is, the one, as will be seen, who is decisive for the choice of investment.[11] The straight line $0HF$ represents a firm with a uniform age distribution of workers. In this case the time horizon of the median partner is equal to BP. This is to say, given the normal requirements for validity, there will be a majority in favour of all the investments projects which have a duration less than or equal to BP. In fact, if a project of a slightly longer duration is brought to the assembly for consideration, the median partner would have an interest in casting a vote against it (because his/her time horizon would be shorter), determining the reversal of the majority.

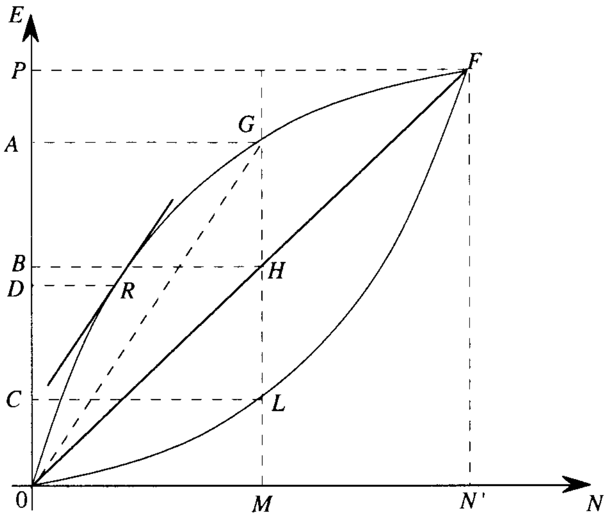

Figure 10.1 The median partner and three different distributions of workers by age

The $0GF$ curve represents a situation where there is a preponderance of workers in the higher age bands. In this case the maximum duration of an investment equal to the time horizon of the median partner of this firm is $AP < BP$.

Finally the $0LF$ curve represents the firm with characteristics exactly opposite to the one just examined, that is with a greater number of younger partners. In this case following the above-mentioned criterion it can be seen that the maximum duration allowed for the investments is $CP > BP > AP$.

To conclude, if the median partner has a time horizon equal to $n < T$, he/she will constrain the entire majority and the investment of one monetary unit will be realized only if:

$$\sum_{t=1}^{n} r_t(1+i)^{-t} = 1 \qquad (10.2)$$

in which r_t as in (10.1), indicates the constant future annual return generated by the investment to gross of depreciation and net of other related operating costs.

If the same investment of (10.1) is considered in (10.2), it is clear now, given $n < T$, that the left-hand side of (10.2) will be inferior to the corresponding term in (10.1) and therefore the condition put by (10.2) is not respected and the investment would not be worthwhile. Consequently, the WMF will invest less than the capitalistic firm.

Developing the summation of the first member of (10.2) and resolving for r it is possible to obtain the rate which leaves the partner indifferent to the choice between financing the firm and allocating his/her savings to the financial market. This gives:

$$r = \frac{i}{1-(1+i)^{-n}} \qquad (10.3)$$

Equation (10.3) first of all allows us to see that for realistic (positive) values of i, r will always have a greater value. Then considering the time horizon of the partner it is possible to see that for $n = 1$, the rate of return must at least be equal to $1 + i$. This means that at an external rate of 10 per cent must correspond to a rate of return to the investment of at least 110 per cent for the partner to opt for self-financing. This, naturally, is an extreme case because of the very short period of time considered, but the rate of return decreases and tends to come closer to i only for very high and unrealistic values of n.[12] Given that i = 10 per cent, for $n = 7$ (a duration which is long for an industrial investment not in the form of real estate) the corresponding rate of return is 20.54 per cent, which is still more than double the interest rate obtainable on the financial market.

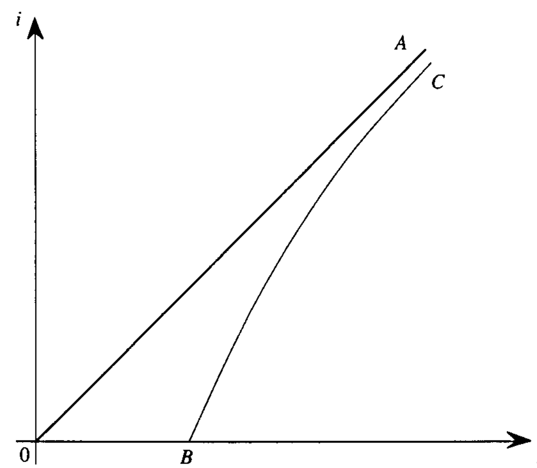

Figure 10.2 Relation between the return generated by the investment and the market interest rate

Now holding the duration of investment constant it is possible to see the limit values of r when i changes. Given n, r tends to i for extraordinarily high values of the latter, while it tends to a constant value equal to $1/n$ as i becomes smaller and smaller.[13] The complete relation between i and r is demonstrated effectively by Figure 10.2, where $0A$ is a 45° line, indicating those points where the two variables are equal. The BC curve starting from the point where $r = 1/n$ and tending asymptotically to $0A$ shows, on the other hand, the value of r for every possible value of i.

10.4 THE WMF AND UNDERINVESTMENT

The extent to which the difference between the interest rate and the minimum return required of investments affects the supply of self-financing (Furubotn and Pejovich, 1970a) can be examined with the help of Figure 10.3, in which the diagram just observed plays an instrumental role. The starting point is the savings supply curve represented by $0QS'$ in the top right-hand-side diagram. It is constructed by considering the possibility of investment of savings outside the firm, represented by bank deposit accounts and by government bonds. The BC curve of the top left diagram has already been examined and serves the purpose of determining the correspondence between values of i (on the vertical axis) and r (on the horizontal axis). The 45° line $0D$ in the below left diagram, as usual, serves merely as an instrument of transposition. It is thus possible to construct a curve FGS'' in the below right diagram. This represents the transformation of $0QS'$ when the difference between i and r is considered, and can be interpreted as the self-financing supply curve of the partners with the time horizon limited to n. The joint presence of a limited time horizon and the attenuation of property rights determines this dichotomy between the two markets, which is non-existent in the PMF. Its situation can easily be seen using the same Figure 10.3 and taking into account that in the capitalistic firm the BC curve in the top left diagram coincides with the 45° line $0A$. From this it follows that the FGS'' curve is identical to $0QS'$.

Now assume that the market interest rate is i' (top right diagram). It can be seen that in this case the corresponding rate of return is r'. This means that partners will be willing to invest in their firm (through self-financing) only if they are able to obtain a return equal to or greater than r'. In this case, since the tract FG loses its relevance the effective supply of savings to the firm (self-financing) will be $r'GS''$. In fact, indicating by r^* the rate of return to investment and if it is the case that $r^* < r'$ the whole stock of savings will flow to the financial market which, offering the rate i, becomes the more attractive.

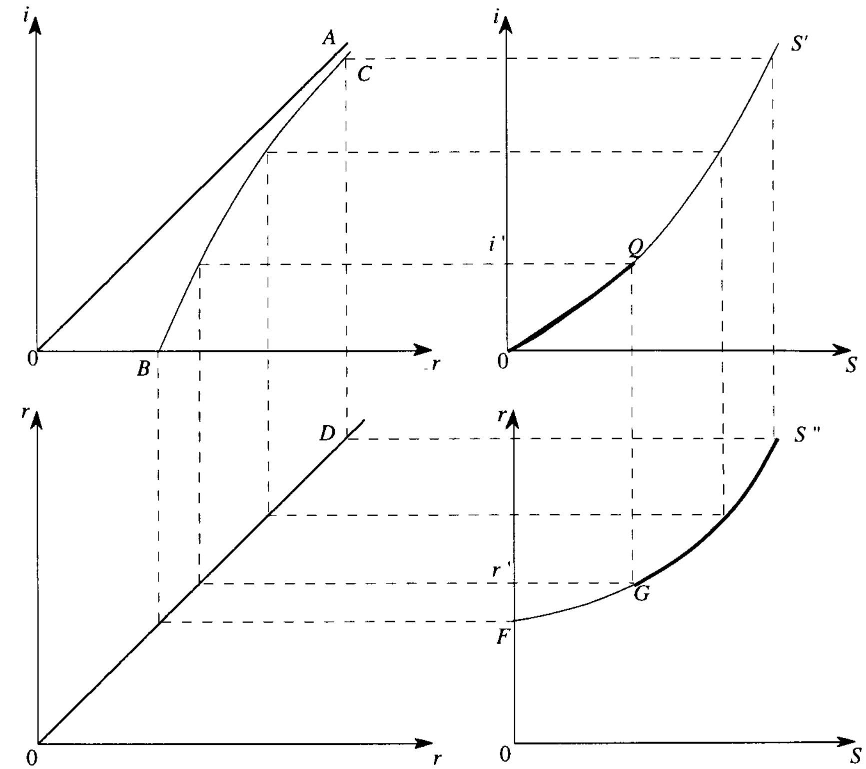

Figure 10.3 Effect on self-financing of the difference between the market interest rate and the return generated by the investment

Consistent with the premise of the model, we can deduce that for $r^* > r'$ the savings will flow to the firm until all possibilities of investment are exhausted. Consequently, given that $i = i'$, the operative tract of the supply curve of savings to the financial market is $0Qi'$ (top right diagram). Only if $r^* = r'$ is there indifference on the part of partners and a distribution between two destinations can be considered.[14]

The effective rate of return, r^*, depends naturally on the concrete opportunities for investment that the firm is presented with. In other words it depends on the marginal efficiency curve of investment relevant to the firm.

Figure 10.4 considers alternative situations with three possible demand for investment curves $I^\circ I^\circ$, $I'I'$ and $I''I''$, in which superscripts represent an ascending order of return to the investment. Moreover, the relevant portions of two supply curves of savings curves from Figure 10.3 are reported: the $r'GS''$

curve of self-financing supply and the $0Qi'$ curve for the supply of savings in the market external to the firm.

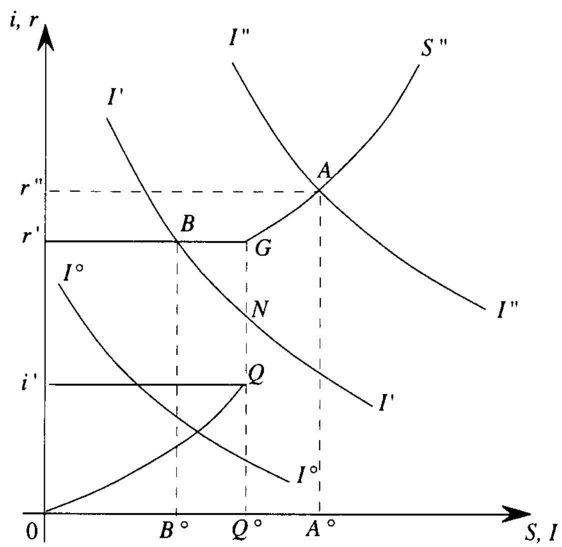

Figure 10.4 Investments, self-financing and the supply of savings to the market outside the worker-managed firm

If the most optimistic situation represented by the $I''I''$ curve, with ample possibility of investment, is considered, investment would be $0A°$ with a predicted rate of return equal to r''. And since $r'' > r'$ it would be worthwhile for the partners to direct all their savings towards self-financing.

Let us consider now the intermediate situation where the investment demand curve is $I'I'$. In this case the intersection with the supply of self-financing curve is at B and therefore the investment made would be $0B°$ while the return is exactly equal to the minimum rate r'. In the particular situation, the possible presence of further savings supply equal to $B°Q°$ has to find a place on the finance market at the rate i', which is more worthwhile than other investments represented by the tract BN of the $I'I'$ curve at rates lower than r'.

The last case to be considered is that represented by the demand for investment curve $I°I°$. It can easily be seen that now there is no possibility for the firm to invest because the marginal efficiency of the investment of funds kept for self-financing is always below the minimum rate r' demanded by the partner. Therefore, the $0Qi'$ curve will become operational and savings equal to $0Q°$ will flow to the financial market. The further possible presence of savings (beyond $0Q°$) will not be allocated because it 'voluntarily' requires

remuneration greater than i' which could only be obtained by investments with a higher rate of return than r'. But it has been seen that for the assumption represented by $I°I°$ the maximum obtainable rate of return from investments is less than r'.

A comparison with capitalistic firms and the measurement of underinvestment of WMF in geometric terms can be undertaken with the aid of Figure 10.5 which is constructed by adding the savings supply curve relevant for the PMF 'twin' to Figure 10.4.

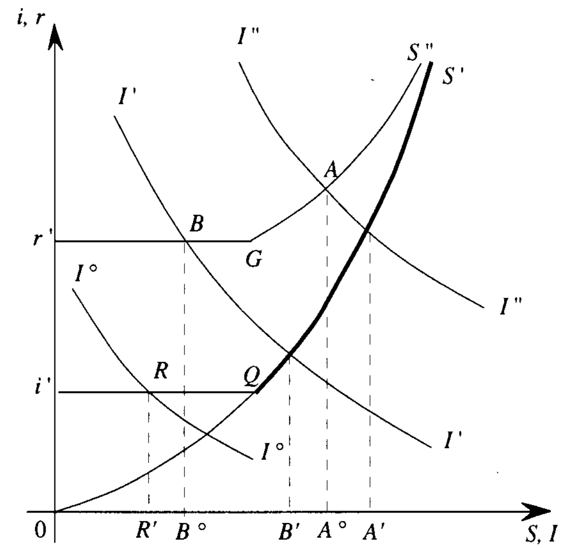

Figure 10.5 The measurement of underinvestment of the worker-managed firm

Thus, the figure comprises three supply curves of savings: the first two, $r'GS''$ and $0Qi'$, as has been seen, are related to the supply of self-financing and of savings to the market outside the firm, respectively, and the third is $0QS'$[15] related to savings supply relevant to the capitalistic 'twin'. Since, for a correct comparison between the two firms, we need to consider identical internal and environmental conditions, excepting the obvious structural differences, it should be assumed that for both the firms the rate of interest i' and the marginal efficiency of investment functions are identical. Therefore, the rate and the demand function of investment in Figure 10.4 are used. Thus, it is possible to see that if the marginal efficiency of investment is given by the curve $I''I''$ then the PMF invests up to $0A'$ in comparison to $0A°$ for the WMF. The loss of investment is, therefore, equal to $A°A'$. Instead, when the intermediate situation in which occasions for investment are fewer is considered, represented by the curve $I'I'$, the capitalistic firm reaches a level of investment equal to $0B'$ while the investment of the WMF is limited to $0B°$, with a loss of investment equal to $B°B'$. Finally, in the case in which the marginal efficiency curve of investment is $I°I°$, the PMF makes an investment equal to $0R'$ while the investment made by the WMF is zero. In the latter case the capitalistic firm pushes the investment up to the point where the demand curve $I°I°$ intersects the effective supply curve of savings $i'QS'$.[16]

From what has been said it can be concluded that the WMF is subject to the *Furubotn–Pejovich effect* and this is related to the following conditions:

1. the time horizon of the majority of partners is shorter than the period in which the investment will provide returns;
2. supposing a finite number of possibilities of investment, the time horizon is not sufficient to allow the recovery of the invested capital.

10.5 THE WMF AND THE *FURUBOTN–PEJOVICH EFFECT*

There is disagreement over the practical relevance of the *Furubotn–Pejovich effect*. It was particularly emphasized by the economists after whom it was named. In contrast, some studies tend to get round the problem by imposing the *ad hoc* assumption[17] that the median partner always has a longer time horizon than the duration of the investment projects examined and, consequently, the majority approves them. Regarding the influence of the median partner, it has been seen above (Figure 10.1) that the existence of underinvestment depends on the age distribution of partners. In general, despite knowing that it is impossible to generalize in this matter, it is stated that there is a disproportion between the average working life of a person and the average duration of investment (see Bartlett and Uvalic, 1986, p. 17), which implies that the *Furubotn–Pejovich effect* has little practical relevance.[18]

On close inspection, however, the problem cannot be left at this and at least two observations need to be made. The first takes into account that the evaluation of the time horizon of the partners of a WMF, as we already have had occasion to see, should refer to the median partner, that is, the partner in the majority with the shortest time horizon and not to the mean time horizon of the partners, that is, the partner in the majority with the shortest time horizon and not to the mean time horizon of the partners in the majority (Jossa, 1988a). Examining Figure 10.1 one can see that in the case in which the distribution of partners is $0GF$, the difference between two criteria can be important. The length of stay of the median partner in the firm is, in fact, equal to AP, whereas the average horizon of majority partners is equal to DP.[19] The relevant variable for the choice of investment is naturally the former.

The second observation, on the other hand, regards the policy towards dividends (Furubotn, 1980a). The part of the annual profit which will be distributed among partners and, by default, the part that is set aside for self-financing is naturally decided by the majority. A partner with decision power knows that over time new members will be admitted to the firm, and he/she is bound to be excluded from the majority group before reaching retirement age.[20] When this happens there is nothing to guarantee that the new majority would follow the same dividends policy which led to the investments made by the old managing group. For example, given new opportunities offered by market or technology it could decide a drastic policy of self-financing, reducing dividends to a minimum. In such a case, the greater incomes that the old partners had expected on the basis of which investments had been made in the past would disappear. To avoid such an unpleasant turn of events, the majority partners in planning the investments may reduce their time horizon to less than the period of their remaining stay with the firm. Specifically this would be equal to the period during which, according to their expectations, the current majority group will still be able to exercise its leadership.

Finally it should be pointed out that attempts to eradicate the source of underinvestment introduce new difficulties for the WMF. To suppose, in fact, that the median partner has a sufficiently long time horizon to approve any project of investment implies (in this context, by the definition of the median) that the minority is always made up of older partners. But this means that only the extent of the problem is changed without eliminating it, because the new question concerning that part of the collective, the minority which suffers repeated economic damage, is posed.[21] Going back to equation (10.2) it can be seen that this represents the criterion for the selection of investments for the majority of partners, but it is not necessarily valid for the minority as well. They probably have a time horizon $n' < n$, so that the operation may not be worthwhile in their estimation. In other words, since they will leave the firm before the members of the majority group, the flow of annual profit r that they receive is not sufficient to allow them the complete recovery of the self-financed investments. Given the assumptions, there is no way for them to recoup what they have invested in the firm. In this particular case, there is no underinvestment but rather a violation of equity, which is not found in the capitalistic firm that, as will be seen shortly, can create important problems. Moreover, this is a paradoxical case, since it goes against the principles of equity and social justice, which are at the heart of the self-managed firm.

Implicitly this situation is justified in some recent models (Smith and Ye, 1988; Mitchell, 1989; and Conte and Ye, 1995) by the fact that the partners who actually 'suffer' a decision to invest and have to renounce a substantial part of their rewards, have imposed their decision on the previous generation in their time, enjoying the relative advantages.

This kind of assumption implies a disputable form of 'intergenerational exploitation' and does not take into account one relevant circumstance. In fact, in the self-managed firm a similar mechanism creates the basis for introducing into the firm a new tendency of self-extinction[22] or at least reducing its potential for development.

The partners belonging to the same generational group who constitute the majority in the first part of their working lives and hence have 'exploited', in the way mentioned earlier, the earlier generation, can avoid becoming the victims of inequity in their time by preventing their firm from employing younger partners and thus choosing to be in the 'majority' until the end of their working lives, which will consequently coincide with the end of the firm. Taking a less extreme view, it is legitimate to suppose that the fear that power will fall into the hands of younger partners will have negative consequences for the development of the firm.

The direct or indirect consequences of the effect under examination therefore cannot be neglected, especially if it is considered that they are completely unheard of in the capitalistic firm and, as it will be seen, also to the other forms of self-managed firm.

10.6 LIMITED TIME HORIZON: THE CASE OF THE LMF

After having examined the problem of underinvestment in the WMF in the last three sections, let us now move on to consider the case of the LMF. In this type of firm, as has already been seen, there is no self-financing and hence the partners' contribution to capital investment is nil since we know that all activities are externally financed through loans. Naturally, partners who want to invest their private savings in the debenture of the firm as an alternative to a bank savings account or government bonds can also participate in financing. It is important, however, to distinguish this kind of financing, which is external,[23] from self-financing in the WMF decided by the majority of partners, which, besides also employing the dissenters, transforms the 'forced' saving acquired in this way into venture capital, over which, in addition, partners' property rights are limited. With voluntary financing, however, a partner who has invested in the firm's bonds and who leaves the firm will have complete control over his/her securities. This implies the right to enjoy the interest, to recoup the loaned capital on maturity and to be able to sell the bonds at any moment on financial markets.

As a first approximation it may be affirmed that the LMF makes a clear distinction between the capital of the firm and that of the partner; another clear

distinction follows from this, namely that between labour incomes and capital incomes (Jossa, 1986, 1988a, 1988d). Consequently a partner who withdraws cannot have any claim on the capital share of the firm and, therefore, there cannot be any *Furubotn–Pejovich effect* on investment. This allows us to affirm that a partner in an LMF will not suffer capital losses due to investment decisions, given the lack of any form of self-financing. Therefore, there cannot be a tendency to underinvest for this reason.

Considering that the cause of underinvestment which penalizes the WMF does not hold true for the LMF, it is necessary now to examine the criteria that this type of firm employs for the selection of investments.

10.6.1 The LMF: The Time Horizon of Partners is Longer Than the Duration of Investments

Supposing that the time horizons of partners are longer than the duration of investments, then they will have the incentive to make the marginal investment of one monetary unit so long as:

$$\sum_{t=1}^{T}\left(r_t - d_t - i_t\right)(1+i)^{-t} = 0 \tag{10.4}$$

where

T = the duration of the investment in years
r_t = the gross return on investment
d_t = the annual rate of depreciation of investment
i_t = the market interest rate.

Equation (10.4) ensures the efficiency of the chosen investment because its total gross return is at least equal to its cost.

10.6.2 The LMF: The Time Horizon of Partners is Shorter Than the Duration of Investments

If, on the other hand, the time horizon of the median partner is shorter than the duration of investment, then the group managing the LMF will follow the criterion:

$$\sum_{t=1}^{n}\left(r_t - d_t - i_t\right)(1+i)^{-t} = 0 \tag{10.5}$$

where n represents the time horizon of the majority partner. In this case situations can occur which, while profitable for partners, are far from the optimal allocation of resources. The partners of the LMF are interested only in the initial segment of n years of the life of investment which is equal to their time horizon, and it is on the basis of this period that they make their choices. Whereas in the case of (10.4) the incentives to the partners who invest automatically ensure the efficiency of the investment, when the criterion of choice becomes (10.5) this coincidence between the two characteristics of investment is no longer certain. Equation (10.5) guarantees only that in the temporal arc from 1 to n the flow of gross return on investment will be equal to the flow of costs but there is no guarantee that the same will occur for the period from $n + 1$ to T, that is, for the second part of the life of investment, which, given our assumptions, will be managed by the successors to the current partner majority. Furthermore, it is possible that the opposite may occur: on the basis of (10.5) a project of investment may be excluded which, if evaluated for the entire duration T, that is using (10.4), would be worthwhile and efficient. This may happen if the gross income is received over a very long period, or concentrated largely beyond the year n.[24]

In the absence of external constraints, therefore, in the situation described here a distortion in the choice of investment can occur which will lead to the exclusion of efficient investments (which would be made, on the other hand, by the PMF 'twin') and to the realization of investments which although taken as a whole, are inefficient, yet within the time horizon of partners are worthwhile. As we will see, the latter would be discarded by the PMF (and by the WMF).

Therefore there are two opposite tendencies which, when put together, can lead to a situation of lesser or greater investment compared to the capitalistic firm. It is also clear that in the case of overinvestment a part of the investment made could be inefficient.

This tendency to overinvest should not be confused with the discussion in the literature (see Jossa and Casavola, 1993) regarding workers' efforts to safeguard their own jobs in the future. Normally, every act of investment reinforces the structure of the firm, reducing the risk of crises, and often leads to an increase in the number of jobs. Consequently according to this view, all things being equal, there is a possibility that a self-managed firm will invest more than its capitalistic counterpart.

The phenomenon of inefficient investment is not known to the WMF, where the criterion used by the outgoing partners in evaluating a project of investment is based on the possibility of recovering its entire cost within the time at their disposal. Consequently a net return that is positive but less than its cost would prevent the investment.[25]

In order to make the situation under consideration completely equivalent to that of 10.6.1, it would be necessary to assume the introduction of constraints on the LMF. Even if institutionally possible this would not produce positive results. In fact the firm should evaluate the investments according to equation (10.4) and not to (10.5). However, a constraint of this kind would mean some losses for majority partners every time the investment made is unprofitable when evaluated over the time horizon n. Such losses could be avoided only through a complex mechanism of compensation between current and future partners, with a doubtful possibility of this being realized. If, on the other hand, one wants to avoid only the inefficient investments, it would be necessary to impose both constraints simultaneously. But this would certainly mean underinvestment, because compared to the capitalistic firm which does not have to take (10.5) into account, it would have to respect an additional constraint.

All this occurs because not being able to recover any part of capital (contrary to what happens in the PMF and the WMF) persuades the partner to consider not total but only part of the cost of the investment which through depreciation[26] is deducted from his/her interest over the years, 1 to n.

It is also possible to see that in certain circumstances the LMF has opposite characteristics to the WMF. In the case under consideration, in fact, there would be partners with shorter time horizons, most probably older partners, who have greater incentives to invest more than they would in a WMF provided their duration is greater than their time horizon and they yield a positive net return in the n years of their further stay in the firm. Naturally with this kind of behaviour the partners of the LMF realize the profit to the detriment of their successors, to whom they leave a firm with inefficient investments to manage.

10.7 THE LMF AND THE DISTORTION OF INVESTMENTS

In equations (10.4) and (10.5) the cost of investment is represented by depreciation (d_t) and by the interest (i_t). These, given the means of financing the LMF, always have a monetary manifestation which gives them the requisite of certainty. The costs of depreciation, however, are imputed costs and as such they derive from a process of evaluation by the agent who, institutionally, is responsible for the firm. In taking the decision on the choice of investment, as seen earlier, they constitute the key variable because besides being the more relevant cost item, in the specific situation examined, they are widely 'controllable'.

Also in capitalistic firms depreciation is an imputed cost. They, however, are subject to the following constraints:

$$d_t T = 1 \tag{10.6}$$

where d_t is the annual average rate of depreciation of an investment of 1 monetary unit whose life is T years.

Equation (10.6) implies that the PMF must amortize the cost of the investment in the course of its lifetime, so that its cost would be imputed to the productive process. Thus the size of individual annual depreciation becomes secondary. This may be determined following the rule of constant annual shares or considering the wearing out of the capital good to approximate in some way its contribution to production, or attribute the entire cost to only a year. These are problems of accounting and usually do not interest economists. Rather, they observe in the PMF an automatic mechanism which allows the cost of capital to be in some way amortized (attributed) over the time interval T. The constraint (10.6) is not imposed externally on the PMF but arises from its very structure.[27] Avoiding the depreciation of an investment would mean the lack of attribution of costs and hence the collection and distribution of non-realized profits. In other words, there would be a wearing out of capital. Such an increase in immediate profits would be a short-lived advantage for the partners of the PMF because it would mean a reduction in the value of the shares due both to the contraction of the value of the firm, arising from the wearing out of capital, and to the lower future capacity to generate income. Because of the virtually infinite time horizon of the partner, he/she has to bear in mind the implications of every choice, positive or negative, that the firm makes.

A different process with similar results is found in the WMF in which partners have an interest in recovering the contributed capital (in the form of self-financing) and hence necessarily have to attribute the entire cost of the investment during the years of their further stay in the firm. This is sufficient to guarantee that the investment is actually amortized. The discussion on other aspects of depreciation will be taken up again in Section 10.

When the time horizon of the partner is shorter than the duration of the investment, the constraint valid for the capitalistic firm and for the WMF is not applicable to the LMF.[28] In this case, in fact, the management of the investment is shared, as it were, between two generations of partners. Therefore, it becomes evident that in the absence of precise but improbable external norms on the extent of depreciation[29] it is assumed that there will always exist a high level of discretion on the part of the partners of the earlier generation in the distribution of the capital costs during different years of its life. They, for example, may make depreciation non-proportional to the use of capital,

keeping to the minimum limit represented by the extent of the share of reimbursement of the financing. For them, in fact, the only real constraint to be respected is the budget constraint, as the firm annually has to reimburse the financiers with a quota of capital increased by the matured interests.

Consider now the 'budget constraint', assuming that besides reimbursing its own debts it is obliged by ethical or contractual norms to distribute at least a minimum dividend to partners, equal to the corresponding wage in the capitalistic sector of the economy, if existing, or to a socially acceptable subsistence level.[30] Thus we have:

$$rpK - mpK - ipK - D' \geq 0 \tag{10.7}$$

where

rpK	=	gross return on depreciation;
mpK	=	annual quota of reimbursement of financing pK;
ipK	=	interest on the financing pK;
D'	=	minimum dividend.[31]

The firm, as can be seen from (10.5), would have to determine production on the basis of the 'profit equation' which in the self-managed firm takes the following form:

$$rpK - dpK - ipK = D \tag{10.8}$$

Equation (10.8) is nothing but a transformation of (10.5), in which the flow of costs and revenues of only one year are considered.

Because of the particular nature of the LMF, considering what has been said above, nothing ensures that equation (10.8), where dpK represents the extent of the contribution of capital to the productive process, would be respected. In the absence of external constraints, if the instalment of the annual reimbursement of the financing is less than the depreciation quota, that is if $m < d$, then the firm could proceed to a reduced attribution of the costs of capital (a reduction of depreciation dpK) and to distribute the dividends considering only equation (10.7) which being a cash constraint is inviolable.[32]

Therefore, if in (10.8) the value of dpK is replaced by the value of mpK, one will find that the dividend $D'' > D$ that, as regards the surplus, is fictitious because it constitutes an anticipation of future profits. The LMF will distribute the non-realized profits, which will be detrimental to the workers who will subsequently inherit the firm. In fact, they will experience a lower ratio between the flow of capital services and their relative cost.[33]

What has been said so far allows us to draw some fuller conclusions. Thus, it may be affirmed that:

1. There is no *Furubotn–Pejovich effect* in the LMF because there is no contribution of venture capital in any form on the part of partners.
2. In the case in which the time horizon of the median partner is shorter than the duration of the investment there may be a distortion in the mechanism of choice of investments, projects that may have been initiated would be discarded by the PMF 'counterpart' because *ex ante* they are considered inefficient. Moreover, the same mechanism may exclude efficient investments which, as has been seen, yield substantial returns beyond the time horizon of the partners. Hence, strictly speaking there is a need to talk about underinvestment if reference is made to socially valid projects, excluding the distorted evaluation which we have already discussed. If, on the other hand, inefficient investments are also considered, then the final outcome is uncertain and there could also be a form of overinvestment because of the ongoing projects that would be excluded if evaluated on the basis of their whole duration.
3. Because of the absence of external constraints, the majority of workers may reduce the rate of depreciation thereby increasing the cost to future partners. This may increase the incentives to invest (whether efficiently or not) and further enhance the ambiguity of the final outcome indicated at point 2.[34]

10.8 MORE ON THE WMF AND THE LMF

It was observed earlier that the WMF, by assumption, does not have access to credit. This may be considered a simplification for the purpose of analysis but it also has a theoretical justification.

In fact, Furubotn, analysing ex-Yugoslavian firms, shows that if a firm, a WMF according to the definition of Vanek, is allowed indebtedness, then it will completely abandon self-financing (Furubotn, 1976, 1980a, 1980b). If this is true, our initial assumption is not only useful for simplification but also necessary.

Since 1976 when Furubotn proposed his model, which excluded the possibility of external financing, there has been a long and animated debate on the question (Furubotn, 1974, 1976, 1980a, 1980b; Stephen, 1978, 1979, 1980, 1984; and Vanek, 1977) which, however, did not arrive at univocal conclusions. The effects of the elimination of the constraint on financing exclusively from internal sources may be examined with the help of Figure 10.6. It shows two savings supply curves, $0S'$ related to the financial market and $r'GS''$ related to the supply of self-financing by partners. The significance of the two curves has already been examined in the previous chapter. The rate i' is the exogenously determined rate at which the partners may invest their savings on the external market, where financial instruments consist of bank deposit accounts and

government bonds. The rate r' is a function of i' and represents the minimum rate of return at which the partners are disposed to invest their funds (non-distributed dividends) in the firm. *II* is the marginal efficiency of investment curve. An assumption which is accepted by all the participants to the debate is related to the interest rate at which the firm may take loans (i''), which, like the rate i', is considered as exogenously given, determined by the government.

Let us see the various possible situations according to the assumptions made on the magnitude of I''.

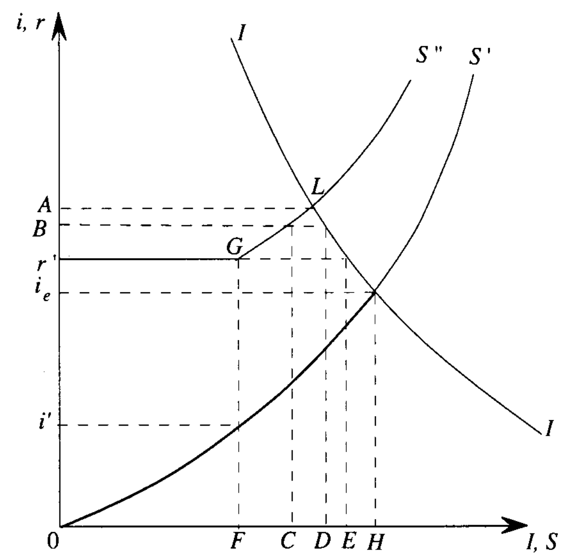

Figure 10.6 The worker-managed firm with the possibility of external financing

If $i'' > 0A$, then all investment would be self-financed. The amount of investment is given by the distance between the vertical axis and the *IL* tract of the *II* curve.

If $0A > i'' > r'$, then investment would be partially self-financed and partially financed externally. If, for example, $i'' = 0B$ then total investment will be $0D$, of which the $0C$ part will be acquired by internal funds and the residual CD by external financing. Furubotn (1980b) in a dispute with Stephen (1980) tries to show that in this situation partners would behave differently. According to him they will prefer to invest up to $0D$ using external sources and invest a quantity equal to DE through self-financing. Such a thesis may seem to be peculiar because although it is true that in this way they will obtain a greater level of investment, it is also true that such a choice will mean an increase in costs. A greater part of the investment (0*D*) in fact would be paid at the rate 0*B* while with the first assumption a relevant quantity (0*F*) would be paid at $r' < 0B$. Naturally Furubotn's purpose is to show that a greater part of investment is financed externally, but his assumption can only be valid if the greater cost, in terms of interest, may in turn be considered an investment. In other words, Furubotn's assumption is valid if the greater cost in terms of interest payments is compensated by at least an equivalent return on the additional investment.

If $i'' = r'$, then investment will be equal to 0*E*, 0*F* through self-financing and *FE* from external sources.

If $i'' < r'$, then there will only be external financing.

This last case is the one Furubotn considers normal while the others are the product of particular situations which occur rather rarely. The explanation of this is dependent on the assumptions of a limited time horizon and attenuated property rights. These assumptions, as was seen in Section 3 of this chapter, ensure that given i' the value of r' is extremely high, in any event, higher than any realistic value of i''. The assumption that $i'' > r'$ would imply a desire, on the part of the authority responsible for setting the rate i'', to discourage investment. And since assumptions of this kind are to be avoided, it may realistically be supposed that i'' is always less than r'.

The last statements of Furubotn seem to be valid and are also confirmed by the fact that if the mechanism of exogenous determination of the two interest rates is excluded and a situation of equilibrium is assumed, then it should be agreed that they tend to coincide, apart from any intermediation costs, while the value of r' will always be relatively far from i'. Consequently i'' will always be in the segment between i' and r'.

Therefore it is possible that if external financing is allowed in the WMF, it would completely abandon self-financing and thus would lose its institutional characteristics of a WMF.

As would be expected, a situation of this kind has important effects on the question of underinvestment. In Figure 10.6 it is possible to see that when the rate i'' is equal to i_e, then the firm will obtain finance solely on the market and its level of investment will be 0*H*. The latter is also the quantity of investment that the capitalistic 'twin' firm would undertake in a situation of equilibrium. The results regarding the LMF, for which it is indeed possible, mainly in perfect competition, not to have underinvestment, are confirmed.

If on the other hand, following Stephen (1980, 1984), the assumption that the rate on financing (i'') can be greater than the minimum rate (r') is introduced and thus the presence of both the forms of financing is allowed, then the WMF without any prohibition on external financing (let us call it a 'Yugoslavian type of firm') will have the characteristics seen earlier for the WMF and for the LMF. To be more precise it is possible to say that there will be a *Furubotn–Pejovich effect* on self-financed investments while for the investments funded externally there will be a relative distortion in their evaluation and problems will arise regarding depreciation, already examined in relation to the LMF.

10.9 THE CASE OF THE COOPERATIVE IN WESTERN COUNTRIES

Earlier we said that one of the characteristics of this kind of firm is the recoverability of their share of capital on the part of partners who leave the firm.

This recovery is realized through the reimbursement of the share of capital brought in initially and of profits not withdrawn for self-financing. Naturally, regarding this, institutional arrangements vary across different countries. A well-known variant is based on 'internal capital accounts', which was initially used in the cooperatives of Mondragon in Spain and later introduced into the law by some states in the United States.[35] The net capital of the firm is attributed to partners through individual accounts in which both potential extraordinary contributions of capital and the quota of annual profits are credited. Similarly, the accounts are debited when withdrawals of agreed dividends are made by partners. The balance of every account represents the share of the net capital attributed to a partner and constitutes his/her 'credit' in relation to the firm. This, apart from exceptional cases, cannot be withdrawn given the constancy of the relationship of his/her association and indicates the amount that is due to a partner in case of his/her exit from the firm. Naturally the sum of all the balances constitutes the net accountable capital of the firm on a given date.

What has been said in short about the characteristics of the Western type of self-managed firm allows us to affirm that despite the possibility of the recovery of contributed capital, its behaviour has the requisites for suboptimality similar to those found in the type of firm examined up till now (WMF, LMF and WMF with the possibility of external financing).

The firm under consideration in contrast to the WMF does not experience the *Furubotn–Pejovich effect* because the reimbursement of contributed capital in any form is allowed. This, however, has the distortionary characteristics, brought out in relation to the LMF, in evaluating the investment projects and in allocating over time the cost of capital. The former are due to the combined effects of the reduced time horizons of partners and, paradoxically, to the right of reimbursement of capital itself. A partner whose time horizon is *n* years knows, in fact, that except in the case of negative outcomes during his/her further stay (in years) in the firm, when he/she leaves, in any case, the sum of his/her contributed capital will be due to him/her and, in the evaluation of an investment project of duration $T > n$, he/she will take into account only the costs and the revenues which will take place in his/her time horizon, leaving aside any considerations of subsequent periods. In such a circumstance his/her behaviour is similar to that found for partners of the LMF, even if the motivations are completely different.[36] The same set of causes which alters the choice of investments also helps to explain the possibility of an insufficient amortization of capital, to the detriment of subsequent partners. In the LMF, external financing provided the necessary condition for the presence of distortionary effects. However, in the firm under consideration they also occur in the case of self-financed investments.[37]

A further comparison of the Western type of cooperative with the WMF with external financing allows us to see that if, on the one hand, in the former, there is no *Furubotn–Pejovich effect*, on the other, there are distortionary effects on investment and the amortization which takes place even for the self-financed investments, while in the WMF with the possibility of external financing they are confined to the externally-financed investments.[38]

10.10 THE PROBLEM OF DEPRECIATION

The problem of depreciation has already been discussed in the previous sections, leading to the conclusion that various types of self-managed firm which have been discussed, except the WMF, tend to reduce depreciation, thus postponing amortization to the detriment of future partners. This increases the tendency for a distorted evaluation of projects, contributing to a non-efficient allocation of resources.

The discourse should be returned to now because questions related to depreciation and the more general problems of the maintenance of capital are often considered important for an explanation of underinvestment in the self-managed firm (Furubotn, 1980a; Zafiris, 1980, 1982; and Stephen, 1978, 1984). In this regard, in the literature a remarkable confusion is found between institutional and theoretical elements. Some economists (above all Furubotn in his most recent contribution, but also his critics, such as Zafiris) agree in maintaining that the main reason for a lack of incentives to invest is to be found in the particularly severe norms regarding depreciation to which the self-managed firm is subjected. Reference, more or less explicit, is made to the norms present in ex-Yugoslavia which, according to this version, used to impose onerous constraints on the management of capital. In fact, one aspect of the institutional reality of that country, founded on the basis of the social ownership of the means of production, is considered and generalized.

But the problems do not end here because while there is agreement about the necessity of such measures there is no uniformity of interpretation on the precise content of the Yugoslavian norms themselves or, abstracting from the reality of that country, on what should be the actual extent of the rules to impose on self-managed firms in this regard.

Referring to the Yugoslavian firm, Furubotn and Pejovich affirm that it was obliged to maintain the accountable value of its assets through depreciation and, moreover, they say that this did not exclude their sale. In such a case the only requirement was that the revenue from the sale of capital should be used for its replacement and the possible losses due to such operations should be considered as reductions in profits, in such a way that would not influence the total value of the firm (Furubotn and Pejovich, 1970b, p. 433). The explanation provided by the two economists is crystal clear and amounts to saying that, independently of any reference to specific institutional realities in the socialist self-managed firm, the consumption of capital is prohibited. That is, partners are obliged to attribute to current production the reduction of the value of capital due to wear-and-tear or due to provisional disinvestment operations for replacement.[39] However, net disinvestment which would have the effect of reducing the level of fixed capital is not allowed.

But the frame of reference is changed by Furubotn himself who later affirms that Yugoslavian firms were subjected to a kind of double depreciation, since on the one hand they had to carry the burden of the reimbursement of the financing and on the other they had to maintain the accountable value of capital through a suitable setting aside of funds. In this case, the maintenance of the value of capital is not discussed any more; what is discussed is the imposition of an extremely selective norm which would allow only those investments that were able to amortize their own cost, providing a profit to the firm and generating the substitute investment.

More recently, Mitchell (1989) is of the opinion that such an interpretation of Yugoslavian norms, heavily penalizing investment, is not correct and proposes a model in which the behaviour of the Yugoslavian firm regarding the depreciation of capital is described in a way which is similar to that of the capitalistic firm.

Beyond the discordant interpretations found in the literature, it seems comprehensible that in an economy where the ownership of the means of production is social there are norms, although less severe than those described by Furubotn, which tend to avoid the consumption of capital by the partners. But it is also evident that to achieve this purpose it is sufficient that firms continue to undertake the usual amortization of capital as is normally done by capitalistic firms.

In fact, in the PMF amortization has the purpose of allowing:

1. the recovery of the cost of capital through the price of output; think, for example, of a mechanism of mark-up pricing: the imputation of the cost of capital will see to it that sale prices are consequently increased;

2. the reinstatement of the firm's acquisition ability at the moment in which the good is replaced; this happens because the firm reduces observed and distributed profits, thus undertaking a kind of self-financing.

Instead, the non-amortization of a good is equivalent to a larger distribution of profits with the deterioration of the potential to replace the good, or if it were financed externally, of the potential to reimburse the loan.

Naturally, the capitalistic firm is free to permanently reduce its capital through disinvestment. But this is not a deliberate operation of extraordinary finance made in exceptional cases corresponding to the recognition of excess capacity of the firm that may not be utilized otherwise. Such an operation carried over to the framework of the Yugoslavian self-managed firm would have involved the restitution of capital goods, considered superfluous, to the state. This is why in this situation the law was designed so as not to leave partners as the only arbitrators of matters related to goods belonging to the collective.

But if we leave the institutional ambit of that country and exclude the social ownership of the means of production, it is evident that there is no necessity to impose the maintenance of the value of fixed capital for an indefinite period. If, for example, we take the LMF, which by its nature fits perfectly in any institutional framework (Giannola, 1989a), it might be that, changing the overall strategy of the firm, partners have the option to reduce the level of fixed capital. This choice could increase the profitability of the firm and thus be efficient in terms of the allocation of resources.

From what has been said it is clear that the only concrete problem regarding depreciation in the self-managed firm is related to the possibility of postponing the attribution of the cost of externally-financed investments, in the case in which the time horizon of partners is shorter than the duration of the acquisition. This would be detrimental to future partners and to the correct evaluation of the investments themselves. Such a tendency is not entirely avoidable because from the outside it is impossible to evaluate correctly the extent of the reduction in the value of capital but may partially be corrected imposing a minimum quota of obligatory depreciation.

Underinvestment is not related to problems of depreciation but, as Vanek (1975) has pointed out, it can originate from the limited time horizon of partners and under the specific assumptions adopted regarding property rights in the WMF and the LMF. Therefore there is no justification for the relevance that these authors attribute to the problems related to depreciation.

10.11 CONCLUSIONS

From what has been seen in this chapter, the WMF type of self-managed firm may be subject to the problem of underinvestment related either to the particular form of property rights which has been hypothesized or to the time horizon of the partners. In particular, the firm has a clear-cut disadvantage compared to the capitalistic firm in the case where the time horizon of the partners of the majority, compared to that of the median partner, is shorter than the duration of the investment and is not in any case sufficient to allow the recovery of the invested capital.

Regarding the LMF type of self-managed firm the results, however, are different. In it, as has been underlined earlier, there is no contribution of venture capital and consequently there cannot be underinvestment due to a fear of non-recovery of contributed capital. In it, therefore, the *Furubotn–Pejovich effect* cannot operate. In this type of firm, the possibility remains that if the time horizon of the majority of partners is shorter than the duration of the investment then some investments with returns beyond the date of exit of the partners may be excluded. This is not a very relevant hypothesis, since it seems realistic to assume that the greater part of investments will have relatively constant returns over time or that returns will be concentrated in the initial or middle phases of their lives.

It seems that under normal conditions and maintaining the assumption that an investment produces the entire return during its lifetime, without any indirect returns after it expires, then there is no real likelihood of underinvestment in the LMF.

NOTES

1. On this, what Sertel (1982, 1987) proposes was anticipated by Schlicht and von Weizsäcker (1977).
2. Remember that in the WMF external financing is prohibited.
3. The term 'income' is used to mean the aggregate of wage (compensation for the labour contributed), interest (compensation for the capital invested in the firm as self-financing) and eventual profit (surplus) that constitutes overall remuneration of the partner in a self-managed firm.
4. This appellation was given by McCain (1977).
5. Vanek (1970, pp. 304–5) refers to a contribution of Pejovich in November 1968 at the Meeting of the Southern Economic Association.
6. Pejovich (1969), Furubotn and Pejovich (1970a, 1970b, 1972, 1973) and Furubotn (1971, 1976, 1978, 1980a, 1980b).
7. It is presumed throughout this study that every investment yields the whole return in its lifetime, without there being an indirect residual return following its deterioration which

in any way can raise the value of the firm. For a different hypothesis and related consequences, see Cuomo (1993). For a discussion on this, see also Ellerman (1992b).

8. Considering the marginal investment of one monetary unit, over T years, on the basis of (10.1), one finds that the present value of its returns r_t, at rate i, must be equal to its cost (one monetary unit), therefore:

$$\sum_{t=1}^{T} r_t (1+i)^{-t} - 1 = 0 \tag{10.1a}$$

For the partner who leaves the firm after n years, with

$$n < T \tag{10.1b}$$

the economic result (P) will be the following:

$$P = \sum_{t=1}^{n} r_t (1+i)^{-t} - 1 < 0$$

that is, it will be a loss given relations (10.1a) and (10.1b).

9. For an explanation, see Jossa (1988a).

10. For simplicity it is supposed that workers leave the firm only for this reason.

11. It is assumed that the decisions are taken by the assembly of partners using the rule of absolute majority. It would make little difference if investments, even in the self-managed firm, are decided by managers and not by the plenary assembly of workers. It is sufficient to remember that the same managers are nominated by workers and, therefore, are subject to their control with a possibility that when there is a valid reason the mandate can be revoked. Furubotn and Pejovich (1970b) foresaw a case of the kind but placed it in the framework of collaboration between managers and partners. The former maximize an objective function related to the level of investments as well as current income but pursue their aim through persuasive attempts and without forcing the issue which, as has been said, would be to their disadvantage.

12. Indeed,

$$\lim_{n\to\infty}\left[\frac{i}{1-(1+i)^{-n}}\right] = i.$$

13. Indeed,

$$\lim_{i\to\infty}\left[\frac{i}{1-(1+i)^{-n}}\right] = i$$

and

$$\lim_{i\to 0}\left[\frac{i}{1-(1+i)^{-n}}\right] = \frac{1}{n}.$$

14. Naturally given the extreme simplicity of the model, the other elements of discrimination among investments (for example risk) not concerned with return are not taken into consideration. For a critique, see Horvat (1986).

15. It was seen above that the dichotomy observed for the WMF in the supply of savings curve does not exist for the capitalistic firm.

16. It is evident that the moment it is exogenously established that $i = i'$, the tract $0Q$ of the supply curve of saving loses its significance.

17. Mitchell (1989) assumes that all partners have the same time horizon and that this is equal to the duration of investment. Smith and Meng-Hua Ye (1988), in the context of a dynamic analysis, assume that median partners, who follow each other in time, have the same time horizon and that this is greater than the duration of investments.

18. Conte and Ye (1995) arrive at similar conclusions using an integenerational model. See alsò the work of Chalkey and Estrin (1992).

19. Partners who constitute the majority are represented in Figure 10.1 by the arc $0RG$. Their average age is given by the middle point of the arc (R). On the basis of a corollary of the theorem of Lagrange it can be determined tracing the tangent to the $0RG$ curve which is parallel to the chord $0G$.

20. It is realistically assumed that all new entrants, or the greater part of them, would be younger than the partner under consideration.

21. Regarding this, see Giannola (1989a).

22. For the 'classic' tendencies towards self-extinction, see Vanek (1977, pp. 186–98). Vanek had identified a 'never-employ force', albeit due to other causes.

23. See Vanek (1975, p. 445). For an opposing view, see Ellerman (1986).

24. Think of investments in the research and development sector which are at the core of innovation and therefore have strategic importance for the firm or, more generally, of investments which tend to qualitatively modify the structure of the firm and necessarily present returns only in the long run. On the lack of incentives for invention and innovation (which Vanek considered the principal defect of LMFs) literature is scarce, see Martin (1992).

25. The comparison could be made using equation (10.2) which, for clarity is repeated here:

$$\sum_{t=1}^{n} r_t (1+i)^{-t} = 1 \tag{10.2}$$

In the case of the WMF the investment would be made only if the condition (10.2) is satisfied. In the case of the LMF the investment would be made even if the value of (10.2) is less than 1 provided that:

$$\sum_{t=1}^{n} r_t (1+i)^{-t} \geq \sum_{t=1}^{n} (d_t + i_t)(1+i)^{-t}.$$

26. Depreciation is used in its simplest sense as an indicator of the reduction in value sustained by the fixed capital because of its presence in the firm. Regarding this, see Brealey and Myers (1988).

27. In fact, in Western countries, there are no norms that predict the obligation of setting aside quotas for depreciation. Instead, the only norms for depreciation are fiscal norms which tend to fix the maximum limit, and not the minimum, of the rates.

28. For critical considerations, see Chillemi (1981, p. 157).

29. It will be seen in what follows that the imposition of criteria for determining the share of depreciation can mean, in itself, a further problem for the choice of the optimal level of investment.

30. This kind of hypothesis is legitimate because the partners of a self-managed firm are also the workers, and in a capitalistic firm in any case they would have the right to a minimum contractual wage.

31. The presence of D' does not imply a loss of generality of the reasoning. It is only a realistic artifice to provide a sense to the concept of the budget constraint in the self-managed firm.
32. It is assumed that it would be impossible to obtain loans to pay non-realized dividends, for the simple reason that there would be no one willing to give credit of this kind.
33. Think of the acquisition of a capital good which would be utilized with greater intensity in the initial years and has been financed by a debt to be reimbursed in instalments with constant capital shares. In this case, if depreciation takes into account the flow of services furnished by the investment, in the first years, their shares should be higher than the instalments of reimbursement of the loan and the contrary should happen in subsequent years. The attribution of a bigger cost in the initial years is justified either by the intensive use of the good or by the fact that its greater exploitation would yield a higher profit compared to the subsequent years. If, instead, a uniform criterion of depreciation is used, that is the one implicitly employed by partners who give importance only to the budget constraint, the ratio between the attributed cost of the capital and the average return of the same will initially be lower than that of the final period and consequently in the initial years there will be an appropriation on the part of the outgoing partners of future dividends pertaining to the would-be partners of the firm.
34. Assumptions corresponding to what have been said in points 2 and 3 are implicit in some explanations given by the literature on the phenomenon of the excess of investment often characterizing the labour-managed firms in former Yugoslavia. In this specific case it has not been caused by the immediate high returns on investments but by the reduction of the instalments of repayments of loans, made by its continuous renegotiation. For contributions on this question, see Mitchell (1988, 1989). For a different reason for overinvestment related to the will of the partners to 'ensure' their future in the firm see Jossa (1988a).
35. On the Spanish case, see Bradley and Gelb (1983), Thomas and Logan (1982), Oakeshott (1975, 1978, 1982) and Ellerman (1984). On the United States, see Ellerman (1986).
36. Given the assumption of completely external financing, partners in an LMF do not have any capital to recover.
37. In order for a partner to receive the repayment of his/her capital, it is not necessary, in fact, that, as in the WMF, the return on the investment allows the complete recovery of capital in the course of the n years before he/she leaves the firm. The right of reimbursement is never touched and a reduction in his/her share can only be caused by losses that occur before the exit of the partner from the firm.
38. It should be emphasized that the best empirical study of underinvestment by Estrin and Jones (1995) finds no evidence of underinvestment in the case of French cooperatives.
39. Let C be the cost of acquisition of a capital good and A the sum of the quota of depreciation related to it, which is already set aside. In the system of values internal to the firm based on the cost of acquisition, the (accountable) value of the good is, consequently, equal to $(C-A)$. Now let us suppose that the firm decides to disinvest and sells the goods at the market price R, presumably inferior to C (Zafiris, 1982, p. 62). The economic outcome of the operation would be the following:

$$M = R - (C - A) \tag{10.9}$$

which will modify the overall economic outcome of the firm's ongoing operations. The disinvestment with its consequent profits or losses, automatically means the amortization of the non-recovered part of the investment through sale. In fact, from (10.9) we get:

$$C - R = A - M \tag{10.10}$$

where $(C - R)$ is the amount of effective investment made and $(A - M)$ is the total depreciation of the investment. Part A corresponds to what has been put aside in the previous years while part M, which is negative if there is a loss, represents further reductions. If disinvestment is concluded with a profit, then M is positive and corresponds to a reduction in the amount set aside which evidently was in excess.

11. Property rights and the financing of the cooperative firm

11.1 INTRODUCTION

As has been seen in the previous chapters, self-managed firms take on a wide variety of forms, and the fact that there is not yet a clear 'ideal type' for self-managed firms, or a precise model of such a firm's behaviour, leads to persistent confusion even as regards general questions. The distinction between 'labour-managed firms' and 'worker-managed firms' introduced by Vanek and often referred to in the subsequent literature is not always employed with the necessary rigour. As well as leading to erroneous conclusions with regard to the problem of underinvestment, it also has implications for the analysis of the other aspects of the functioning of self-managed firms, and, in particular, the relationship between the property rights of partners and the financing of entrepreneurial activity.

These issues are the subject of this chapter.

11.2 MORE ON THE 'OVERTURNING' OF THE CAPITAL–LABOUR RELATIONSHIP

Consider a firm run by workers in which all capital investment is financed by borrowing. Under self-management, as has been said, (a) all production decisions, how much and what to produce as well as investment choices, are taken by workers, and (b) workers receive the takings of the firm after having paid production costs, so that labour may be considered the 'entrepreneurial input' (Dubravcic, 1970). A firm in which all capital is borrowed may, therefore, be thought of as a firm in which labour 'employs' capital, paying it an agreed sum while workers divide up among themselves the residual profits.

Consequently, from what has been said thus far, it is clear that a self-managed firm in which all capital is borrowed may be characterized as one in which the traditional capital–labour relationship has been inverted. Under capitalism, capital hires labour, paying workers a fixed wage while appropriating the 'residual'; under self-management, according to the model outlined here, labour hires capital, paying it a fixed income, while workers

receive the 'residual'. The inversion of the capital–labour relationship lies in the fact that under capitalism, decisions are taken by capitalists whereas, under self-management they are taken by workers as in (and consequent to) the fact that under capitalism workers have fixed incomes while capitalists have variable incomes (taking on the risks associated with productive activity), while under a system of self-management capitalists have fixed incomes and workers variable ones, thus assuming the responsibilities for decision-making.

For the inversion of the capital–labour relationship to be complete it is necessary, therefore, that: (a) the self-managed firm does not hire salaried workers; and (b) payments to capital are fixed and do not vary with the outcome from the economic activity.

Condition (a) is of substantial importance from the point of view of the underlying principles, since only if salaried labour is completely abolished does a system of self-management involve a true socialist revolution, with the inversion of the capital–labour relationship which eliminates the control of 'things' over individuals rendering to the latter the control over the means of production.

From a 'theoretical' point of view, however, it may be reasoned that, if one wants to design an 'ideal type' of social organization which in some sense involves the 'overthrowing' of capitalism, then the abolition of waged labour is not of fundamental importance. Just as the capitalistic firm borrows capital from others so that, to be exact, one should refer to capitalism as that form of social organization in which capitalists hire labour and the *capital of others*, taking the decisions and appropriating the 'residual', so, too, self-managed firms could equally retain the right to hire waged labour, so that self-management could refer to that form of social organization in which workers hire capital and the *labour of others*, retaining the right to take the decisions and to appropriate the 'residual'.

The key element required to characterize an 'ideal type' of social organization distinct from capitalism lies in the overturning of the capital–labour relationship, which is achieved with the assumption on the part of workers of the 'entrepreneurial input' and the associated rights to the 'residual'. In other words, the essence of self-management lies in the attribution to workers of the role of managers of the firm, with the consequent assumption of the risks of production: workers take all the decisions concerning the productive activities of the firm, they assume the risks associated with their decisions and they are paid an income which varies with the success or failure of the firm.[1] On close inspection, this implies that self-management, by its very nature, excludes the possibility of financing its activities through the issuing of shares.[2]

11.3 FINANCING THROUGH SHARE ISSUE

As is well known, under capitalism, the ownership of shares confers both the right to participate in the principal decisions affecting the firm, according to the principle 'to every share, a vote', and to appropriate a part of the profits of the firm in proportion to the size of the shareholding, that is, to appropriate the 'residual'. But in the case of self-management, decisions regarding the life of the firm must be taken by workers, according to the principle, 'one worker, one vote', and the 'residual' must be attributed to the same workers. These rules are so central to the nature of a system of self-management that the existence of shareholder rights appears incompatible with it.

Nor under self-management could one have shares without voting rights because it is not just the decision-making power which contrasts with the logic of self-management but also giving capital rights over the 'residual'.

That the existence of shares is incompatible with the fundamental principles of self-management is confirmed by the fact that one cannot easily organize rights over the 'residual' on the part of shareholders even in a worker-managed firm. The 'residual', by its very nature, is that which remains after all those having the right have been paid a fixed income by the firm. Two distinct 'residuals' are not easily compatible at least if one wants to design a system based on clear and rational principles. On close inspection, the existence of two 'residuals' implies that there exist two different types of rights over the single 'residual', so that one gives workers x per cent and capitalists the remaining $1 - x$ per cent. But this is rather an irrational way of partitioning the 'residual', since once the proportions in which the 'residual' was to be divided had been decided upon, this would have to remain constant (notwithstanding the fact that the capital invested per worker would be constantly changing with the accumulation of capital), because there is no way to establish clearly a rule for periodically repartitioning the 'residual' between the two parties.

To enter into more detail, if one wishes to reward (part of) capital with an income which varied with variations in economic activities, one needs to identify an index on which to base capital's remuneration. Either this index is the net income of the firm, that is, the 'residual' (which is also distributed to workers), and in this case the proportion attributed to capital would need to be fixed once and for all (or at least for long periods); or the index is another variable which rises when business goes well and falls when it does not, and in this case in periods of prosperity the proportion of the 'residual' received by capital would rise, with the proportion going to labour consequently falling, and vice versa, which is clearly irrational.

One possible solution would be to establish that venture capital can only be held by partner-workers and that each one of these must possess the same amount of capital. This is, in effect, a solution that one often finds in practice in cooperatives operating in capitalist countries.[3]

But, from what was said in Chapter 10, it is evident that a cooperative with venture capital where all the partners must necessarily contribute the same amount of labour and capital is not a very rational organizational form and does not imply, obviously, the overturning of the traditional capital–labour relationship.

In contrast to what has been argued above, Peter Jay has maintained that cooperatives can finance themselves through external capital issuing obligations similar to shares with variable incomes (Jay, 1980, pp. 13–17). According to Jay, for workers in a cooperative it would not be very wise to heavily invest their savings in the firm upon which they depend for both employment and income (Jay, 1980, p. 13). That is, cooperatives should not be financed by the venture capital of individual partners, because they already bear the risks of production in their role as entrepreneurs and for this reason they should not take on further risks by financing the cooperative out of their own savings (see, for example, Meade, 1972). Furthermore, if workers invest their savings in their cooperative firm, they must also have the right to withdraw them if they decide to change jobs or are fired. This would mean that new partners would be required to cover the exit of capital, which may not be desirable, or, alternatively, the cooperative would have to take upon itself the payments to the partners who leave, a not indifferent financial burden.

While he excludes the financing of venture capital by partners, Jay is, none the less, in favour of financing the firm with venture capital coming from non-partners. To be more precise, Jay knows full well that a genuine cooperative cannot issue true shares because rights over the disposal of capital and the election of decision-makers must be an exclusive right of the partners. He is also aware that, if the income of workers is the residual, the income of the capitalist-financiers cannot also be so, but maintains, none the less, that cooperatives can issue 'quasi-shares', that is, variable income obligations giving rights to credit rather than to property.

The originality of Jay's proposal thus lies in the fact that he maintains that a firm can issue variable income obligations even if this income is of a residual type.[4] Indeed, in his opinion, the fact that the income from holders of variable income obligations cannot be of the residual type does not create any problems. The size of the dividend on 'quasi-shares' could be decided independently by directors, obviously according to their evaluation of the state of business, since, if a cooperative did not pay reasonable dividends, it would not subsequently be able to find people willing to finance it. This would provide a guarantee to the holders of 'quasi-shares' that the freedom attributed to directors to establish the size of dividends would not be to the advantage of the directors. This freedom of directors to decide dividends, Jay observes, should come as no surprise since the directors of contemporary corporations are entirely free to fix the dividends distributed to shareholders: in both cases the mechanisms of demand and supply will bring about equilibrium in the market for variable income obligations.

But, is it true that the mechanism of which we speak, and which operates today, would operate equally in a society based on cooperative firms?

In a critique of Jay's proposition, Meade has observed that an argument based on demand and supply is valid only if there is reason to believe that both forces are sufficiently strong. If firms were managed by workers, the market for 'quasi-shares' might not have a sufficient base, because incentives to invest in them would be weak. In other words, according to Meade, if the firm does not have an incentive to expand, it also has no incentive to distribute dividends that would allow it to raise more capital through share issue (Meade, 1980, pp. 74–6).

But, as we have noted above, in our opinion the strongest criticism that can be made of Jay's proposition lies in the difficulty in conciliating variable income from capital with self-management.[5]

Naturally, a firm which cannot be financed through share issue will come up against various difficulties. An elementary consideration in this regard is that shareholders also obtain, as part of their recompense, some power over the actions of the firm and, therefore, if one wishes to obtain finance without offering voting rights, or at least some power of control, a higher rate of interest will have to be paid (Marginson, 1993, p. 142).

11.4 UNDERINVESTMENT, THE SALE OF POSITIONS AND THE RIGHT TO LEAVE

If one excludes financing through the issuing of shares, the cooperative firm can raise capital either through self-financing or through borrowing; and this is the basis for distinguishing between the two types of cooperatives mentioned above. In previous chapters, however, it has been seen that in self-financing self-managed firms there is a conflict of interests between those who intend to leave the firm shortly and those who intend to stay with it for the foreseeable future. This conflict gives rise to underinvestment through the '*Furubotn–Pejovich effect*', thus, the question arises as to whether there is a way of avoiding the consequences of this effect for firms that finance themselves (that is, firms which choose the WMF form in preference to the LMF one).

A little reflection is sufficient to realize that the problem facing self-financed firms can be resolved if the position of partner in the firm is allowed to be sold, if, for whatever reason, that person decides to leave the firm (Carson, 1977; Sertel, 1982, pp. 20–23; Berman, 1982; and Mygind, 1986). In this case, in fact, it would be in the interests of all workers to maximize both the income and the capital value of the firm, because the firm which produces more is worth more, and the more the firm is worth the more also is the value of the proportion of it at the disposal of each worker.

The difficulty could also be resolved in another way without recourse to the free sale of positions in the firm (which may well not be to the tastes of the partners – see below). Workers who finance themselves necessarily become the capitalists of the firm and the income which they receive becomes a mixture of labour and capital income. As was seen in Chapter 10, it is therefore clear that the problem of underinvestment arises above all because those who are thinking of shortly leaving the firm, even if they are prepared to save, will not want their savings to be used to finance the firm in which they work at present, since, given the rules of self-management as they are usually outlined, they know that they will lose both the income arising from their savings as well as the savings themselves when they leave the firm. But, if this is true, the other way of avoiding the problem is to allow those who leave the firm to take their 'savings' with them, so that they can continue to enjoy their benefits even after having left the firm.

But this brings us back to the problem with which we started, because both of the solutions proposed above consist, on close inspection, in keeping separate income from capital and income from labour, according to the proposal of Vanek. With the free sale of the position of partner, anyone who wishes to leave a cooperative in order to work elsewhere must find someone prepared to replace them in their original employment, leaving behind the capital bought with their savings (but recouping it with the sale to the new partner) and bringing with them, so to speak, their labour (thus separating their capital from their labour). But, if one does not want to allow the free sale of the position of partner, the problem of underinvestment may be resolved by separating labour and capital incomes in the second of the ways mentioned above, which is a more direct way of keeping the two sources of income distinct from one another. Technically, in terms of the legal and accounting positions, in the deliberations which decide upon the self-financing, the self-financed firm would need to register the sum invested in the name of each partner, and to agree to pay each of them interest, established on the basis of market prices (supposing one wishes to allow a private capital market).[6]

As has been correctly observed, not only are the two proposals considered here not alternatives, but also, allowing the sale of the position of partner does not eliminate the reason for which it is opportune to keep labour and capital incomes distinct. Even if there is a market for partnership positions in cooperatives, internal financing would make the positions of partners too risky (because they would have to invest their own savings in the very firm in which they work). For this reason, self-financing would not be advisable even in those firms which allowed the sale of partnership positions (Fleurbaey, 1993, p. 275).

In any event, in this study, the free sale of partnership positions is just one possible scenario, whereas the type of self-managed firm which we more usually refer to is that which is financed exclusively by borrowing.[7] In any event we will return to the problem of the sale of partnerships and the criticisms of Sertel's proposal in Section 10 of this chapter.

11.5 GUARANTEES FOR THE FIRM'S CREDITORS

Let us now consider problems concerning the guaranteeing of loans. In discussions of the relative merits and faults of LMFs and WMFs, it has often been said[8] that labour-managed firms, in as much as they involve the complete separation of capital from labour and pay capital a fixed income, are *ceteris paribus* more risky than worker-managed firms. Indeed, if the capital goods, the number of partners and the sales are the same, the LMF, which has to remunerate external capital before dividing up the residual, will have a smaller residual which will also fluctuate to a greater extent with variations in business conditions. Must one therefore say that, by their very nature, LMFs are bound to have particular difficulties in raising funds? We will return to the more general problem of rasing finance which faces all forms of self-managed firm in the next section.

In the type of LMF that we have outlined, the guarantees offered to creditors are at a maximum because, not only are creditors paid before workers (and are therefore guaranteed by the 'residual'), and not only can they make a claim on the existing machinery in the firm (supposing that the machinery can be sold in order to meet the debts of the firm) to receive payments due, but, given that the machinery is the property of the state (see Section 10 of this chapter), creditors also have (or may have) the state's guarantee for loans granted to the firm.

But the problem then shifts and becomes: who guarantees to the state that the initiatives taken by workers are good ones leading to successful outcomes? The partners in an LMF who made disastrous decisions and consequently bankrupted the firm could leave the capital equipment to the state and take up other activities, without even having to bother about their creditors (Drèze, 1976; Schlicht and von Weizsäcker, 1977; and Gui, 1982, 1985).

In this way we have arrived at the crux of the problem, to the principal difficulty which is raised in the current literature against the very idea of self-management, and which may be presented in the following manner.

Self-management, one might say, in the form of the 'ideal type' that we have outlined, achieves, as has been shown, a complete overturning of the capital–labour relationship; but, precisely in order to achieve such an overturning, it involves the complete separation between ownership and control, and breaks the link between property and entrepreneurship, which, it is believed, is not only indissoluble under capitalism but would also not be soluble (without deleterious effects on the accumulation of capital) in any society which, although not capitalist, is based on exchange (Napoleoni, 1985).

On closer inspection, it emerges that the separation of ownership and control creates problems that go beyond the guaranteeing of creditors. As we have said, self-management, in the form outlined here, in giving all control to unpropertied workers, may give rise to widespread irresponsibility because those making the decisions may not be made to bear the responsibility for bad ones. The assignment of complete control to labour under self-management implies, in the current formulation of the problem, that workers will be held responsible for their decisions *so long as they work in the firm*. On close inspection, there are at least two problems which arise as a consequence of this:

1. Who guarantees to the partners of a cooperative that, if they take erroneous decisions, some of those who did so will not abandon the firm, leaving the remaining partners to bear the responsibility of the mistaken choices?
2. Who guarantees to the owners of machinery that, if mistaken decisions are taken, all the workers will not abandon the firm leaving the owners to pay debts which they had not contracted?

As regards the first problem, Meade has rightly observed that, if the debts were contracted voluntarily by all partners, then the firm is not a true cooperative if some partners are allowed to leave, dropping all their obligations and leaving the other partners to bear the burden of the debts (Meade, 1972, p. 416 and Sertel, 1982, pp. 12–13).

In order to guarantee to the partners in an LMF that, if mistakes are made, none of the partners will abandon the firm leaving the others in trouble, according to Meade, one needs to retain the logic of a cooperative agreement which requires that an agreement between two parties which is reached with the consent of both parties can also only be dissolved with the consent of both them.[9] But this has the substantial inconvenience of linking the workers to the firm too closely. Therefore, alternatively one might:

a. give each partner the possibility of leaving the firm whenever desired while retaining his/her share of the debts contracted by the firm during the period in which he/she had been a partner (or rather those which, obviously, had not yet been paid off);

b. allow each partner to leave the firm when desired, obliging them, however, to pay, when necessary, compensation to the other partners which would be renegotiated from time to time (having recourse to an arbitrator in the cases of disagreement); or,
c. allow a free market in partners' shares, along the lines of Sertel's proposal discussed above, at the same time establishing that no one may leave the firm without the approval of the other partners if a new surrogate partner is not found to pay the exiting partner's share.

Alternative (a) is the most restrictive in terms of the freedom of movement of partners, but is both logical and viable.[10] Alternative (b) may be difficult to implement. Alternative (c) is perfectly logical, but also differs from Meade's proposal in as much as, not only may a partner leave without the consent of the other partners, but also another may enter equally without the existing partners' consent; it has, on the other hand, obvious drawbacks.

It would appear that alternative (a) is the most attractive, but the problem requires further analysis.

11.6 DIFFICULTIES WITH THE FINANCING OF THE SELF-MANAGED FIRM

Regarding the problems discussed in the previous section, according to many authors, when the capital–labour ratio is particularly high and when the activity is particularly risky, the self-managed firm has great difficulty in raising the necessary capital and it is worth recalling that the joint-stock company was introduced and became established under capitalism precisely because it provided a means to resolve the problem of raising capital for the two most difficult cases just mentioned.

When the capital–labour ratio is particularly high, a substantial part of the income of the firm is capital income and, if capital receives a fixed income and has to be paid first, a downswing in the firm's activity will mean a substantial contraction of labour income which may easily become negative. One might think of periods during which production is interrupted, either because the activity is seasonal or because raw materials are not forthcoming. How could workers pay their huge debts if the income of the firm collapsed? The same is true for a firm working in a particularly risky sector. In either case, there is a danger that the workers may not receive any income (because the firm does not produce a residual) as well as the risk that capital will not receive the sum agreed, or may indeed lose the entire investment if the firm goes bankrupt. In these cases, therefore, it is probable that a firm will not be able to raise the loans which it requires for the lack of its own capital to invest or to be used as

collateral against loans (Meade, 1972, and Drèze, 1989, Chapter IV and 1993, pp. 257–62).

In such a situation, in the opinion of Drèze, the solution for workers in self-managed firms lies in stipulating 'finance contracts' through which the risk is shifted from workers to the financers of the activity, perhaps also specifying in the contract the type of risks the firm may take and those which it may not. Agreements of this kind, he says, are common in today's world. But the particular difficulty facing the self-managed firm is that, usually, the financers will want to have a say in the principal decisions made by the firm. The answer lies, therefore, in transforming borrowed capital into venture capital through the issuing of 'quasi-shares'.

In this regard, Drèze makes reference to the recent 'theory of implicit contracts', which is based on the idea that in capitalistic firms, given that workers are more risk averse than capitalists, it is usual to enter into implicit contracts on the basis of which workers accept a lower salary and, in return, the employer agrees not to reduce the wage in times of crisis, in return that is for the assumption of risk by the employer.[11] The existence of this type of implicit contract under capitalism leads Drèze to suggest that, whatever the activity is, if workers find it worthwhile giving up part of their earnings in order to insure themselves against income variations under capitalism, the same should also occur under a system of self-management where the workers have a similar incentive to transform variable incomes into fixed ones stipulating contracts with those financing the firm, transferring the risks associated with the activity from workers to capitalists.[12]

This provides an explanation for why, usually, in riskier activities it is capital which employs labour and not vice versa and why capitalistic firms tend to be more numerous than self-managed ones. Drèze himself, however, suggests a solution for the difficulties faced by self-managed firms financed by loans. The solution lies, as usual, in insuring against uncertainty: the creation of a central institution for insurance to stabilize the incomes of workers financed by firms and which would subsidize them in periods of crisis (Drèze, 1993, p. 261, and also Fleurbaey, 1993, p. 270).

Another solution to this problem would be to allow the firm to finance itself, both because in this way the need for external capital would be reduced and, above all, because the larger is the degree of self-financing in a firm, the easier it is for it to raise external funds through borrowing. Since it is plausible that in a self-managed firm the willingness of workers to invest their savings will increase with their incomes, Bowles and Gintis suggest that the more developed the society, the greater will be the potential for success of self-managed firms (Bowles and Gintis, 1994).

11.7 MORE ON THE DIFFICULTIES OF FINANCING AND A COMMENT ON DRÈZE

Self-financing of the self-managed firm leads to a blurring of the distinction between capital and labour incomes and this in turn leads to the problems with investment which were examined in the previous chapter. This type of solution to the questions raised by Drèze needs, therefore, to be qualified in as much as it may create more problems than it resolves. The objections of Drèze, however, are of major importance and require further consideration.

There is no doubt that in activities with a high capital–labour ratio, the fixed income of the financers may well be substantially above the residual received by workers. This is a typical problem related to a small variable which is determined by the difference between two large variables and, as a result, is highly volatile. It should be noted, however, that this situation is no different to that faced by a highly labour-intensive capitalistic firm. Also in this case the variable income of the capitalist-entrepreneur is determined by the difference between two, often much larger, variables, namely sales and labour costs. As a result, the risks faced by the capitalist-entrepreneur who chooses to engage in a highly labour-intensive activity correspond to those faced by workers in a self-managed firm who choose to undertake an activity with a high capital–labour ratio. This is not, then, a problem faced only by self-managed firms.

The discussion does not end here, however, in as much as the critique proposed must be considered in its entirety and it remains to explain how a collective of workers can obtain large amounts of capital, in the absence of such a useful instrument as a share issue. Under capitalism, joint-stock companies put together large sums through the issuing of shares to substantial numbers of shareholders. In this way activities can be initiated on a scale which none of the shareholders could or would individually hope to achieve. In the same way, this instrument is ideal to solve the second problem raised by Drèze: that related to particularly risky activities. The mechanism is similar even if one should add that, in the more developed economies, just as specialized institutions become involved, one might think of the same thing occurring in a system of self-management.[13] In any event, risk is dealt with through portfolio diversification: every agent invests a relatively modest share of his/her patrimony in risky activities, so as to avoid seriously damaging consequences for his/her wealth if things should turn out badly.

In a self-managed economy the solution to these two problems cannot but take the same form, based, that is, on the principles of the diversification of investments and the aggregation of capital sums which make up only a small share of the wealth of investors. On the other hand, the instruments to be employed, above all the financial one, do change, however, given what was said in Section 3: this will no longer be the share, but rather an obligation having the typical characteristics of a bond. Large sums of capital can be raised through the numerous operators on financial markets among whom number the very same workers of the firm to be financed.

Portfolio diversification for risky activities may be achieved by investors in the same way as shareholders do in capitalist economies. Sharing the needed investment into smaller sums, according to the degree of risk, it should be possible to raise the required amount. An investor will always be willing to dedicate a proportion, even if extremely small, of his/her wealth to risky investments.

This solution, however, may prove insufficient to raise all the necessary capital and does not solve the equally important parallel problem of the identification of workers disposed to undertake highly risky activities, since failure would mean they lose not only the borrowed capital, but also their job. This specific problem concerning self-managed firms is related to the wider question of the risk aversion of workers which, in Drèze's analysis, assumes a central role. Indeed, risk aversion by workers would lead to a natural tendency for self-managed firms to be transformed into capitalistic ones. As was noted above, this transformation, arising out of the probable interference of external creditors, is likely to be encouraged rather than impeded by partner-workers who in this way would obtain the protection of a potential entrepreneur. This would take on the risks associated with the business while assuring workers of a modest but stable income.[14]

It is necessary, therefore, to seek a solution which neutralizes the potential negative consequences of risky activities, thus protecting workers, and which, at the same time, provides the basis for a generalized decrease of risk aversion in a system of self-management.[15] The reduction of the effects of possible losses arising from particularly risky activities constitutes a necessary condition for persuading potential financers to get involved in the firm.

11.8 PORTFOLIO DIVERSIFICATION IN SELF-MANAGED FIRMS

As is well known, in capitalist economies a single agent may well possess shares in different firms facing varying degrees of risk so as to compensate losses accruing to one firm with gains in another, in this way ensuring that the agent's overall wealth is not seriously depleted. In a self-managed economy, in which one invests not one's capital but one's work, portfolio diversification runs up against obvious physical limits, so that, normally, a worker employed by one firm will tie his/her fate exclusively to that of the firm. If things go badly, he/she will lose his/her entire investment, that is the fruit of his/her labour, without having any means to compensate for this.[16]

On close inspection, however, what is impossible for the individual worker may become possible for a collective of workers united in a self-managed firm if one introduces simple institutional adjustment mechanisms. One might think of the case in which a cooperative wishes to expand the sphere of its activities requiring an investment considered excessively risky for the overall fate of the firm. In such a situation it would be possible to involve other cooperatives through the creation of a new institution, which we will call a second-level cooperative, whose partners are the same as those of the normal cooperative. Each cooperative would 'invest' labour in the new firm in as much as they would delegate one or more partners to go and work in it. The share of the investment of each firm in terms of the number of workers contributed, taking into account the nature of the jobs undertaken,[17] would provide the basis for the dividing up of gains or losses.

The second-level cooperative would be administrated by the workers who worked in it. In making decisions, these workers would necessarily also take into account suggestions made by their collective of origin, of which they would still be part. The type of firm which is proposed is therefore a subsidiary of the ordinary cooperatives involved in the initiative. It is important to note, however, that the workers employed in the subsidiary would retain their equal status as partners of the original firm, even though they work in the new firm. In this way, a real syndicate of firms with overlapping interests would be created and which might, given the possibility that individual cooperatives participate in several activities, consist of a large number of firms.

The capital necessary to the second-level cooperative would be raised in the same way as for all other self-managed firms, that is, through borrowing on financial markets. This would also include the other cooperatives in the syndicate who would obviously have an incentive to contribute. In other words, where the second-level firm had difficulties in raising funds, it would be able to count on the guarantees provided by the other companies, or indeed be financed directly by them. These would be able to negotiate financing for the entire syndicate in as much as, because of the diversification of activities between firms, the degree of risk associated with the consolidated group would be less than the individual firms.[18]

Profits from the second-level cooperative, being the difference between sales and capital (non-labour) costs, would be shared out among participating cooperatives. Each one would add these profits to those arising from their own activities. The overall income would then be shared out among the partners, both those working in the ordinary cooperative and those in the second-level firm. It goes without saying that this would be the same in the unfortunate, but all too possible, case that the cooperative suffers losses. If cooperative *A* has a share (in the sense indicated above) in cooperative *B*, the dividend that every partner of *A*, whether they work for *A* or for *B*, will receive is given by:

$$Y = \frac{R_A - C_A + m\left(R_B - C_B\right)}{N} \tag{11.1}$$

where y is the dividend paid to each partner in cooperative A; N is the number of partners of A; R_A and C_A are the sales and capital costs, respectively, of cooperative A; R_B and C_B are the sales and capital costs, respectively, of cooperative B; and m is the share of cooperative A in B.

Through second-level cooperatives the typical economic actors under self-management, namely LMF-type ordinary cooperatives, which wish to undertake high-risk activities, or to broaden their business interests with levels of production beyond their current capacity, have a protection mechanism very similar to the portfolio diversification employed by capitalist entrepreneurs. All the workers in a syndicate[19] derive their incomes from diversified activities, while those working in the second-level firms will not be disadvantaged with respect to those in ordinary cooperatives since the overall profits produced will be distributed among all partners in participating firms.[20] If the results of the initiative are positive, as a whole all will benefit in the form of increased dividends to the tune of $m(R_B - C_B)$ in (11.1) to be divided among partners. If, on the other hand, the second-level cooperative reports a loss, this term will be negative, thus reducing dividends. In such a case, however, the loss will be distributed over a large number of individuals. Finally, if the loss should be of such a size as to cause the failure of the second-level firm, then the workers in this firm may simply return to employment in their cooperative of origin. It is evident that this element provides maximum protection and thus ensures that all workers will be indifferent between working in the cooperative of origin or in a new second-level firm.

A complete success of the new second-level firm and, therefore, a consequent reduction in the risks associated with the venture may lead the workers in it to desire full autonomy with respect to their cooperatives of origin. This would imply, on the one hand, renouncing all further protection in cases of failure, but on the other, keeping for themselves all further dividends produced which would no longer be added to the presumably smaller dividends derived from the activities of the cooperatives of origin. In such a situation, following the method suggested by Meade,[21] partners in the new firm would have to subject their decision to the approval of the participating cooperatives and to compensate the partners of these in measure equal to the present value of the loss of dividends due to their no longer having a stake in the new cooperative. Taking account of (11.1), the compensation, M, to be paid would be equal to:

$$M = \frac{R_B - C_B}{i}$$

where i represents the market rate of interest. With the achievement of autonomy with respect to the original syndicate, the firm would become an ordinary cooperative. The workers from other cooperatives who had been working in it would become full partners of the new firm, at the same time losing all rights and privileges with respect to the syndicate.

It is by no means sure that the neutralization of risk leads to the outcome described above, in which the setting up of the syndicate had the role of instigating the birth, financing and development of a new firm destined to become fully autonomous in time. Indeed, it is probable that, notwithstanding the success of the initiative, the collective managing the new firm will prefer to continue as a member of the syndicate and therefore continue to benefit from its protection.[22] This raises at least two questions: could such a situation continue indefinitely without becoming incompatible with the spirit of self-management? How should the second-level firm behave in the case in which an increase in the labour force became necessary?

The existence of a syndicate of cooperatives characterized by internal specialization and by a simple hierarchy is not in conflict with the principles of self-management. The subordination of some firms to others within the syndicate does not apply to partners, indeed is aimed at protecting the partners working in the subordinate firms and they maintain an equal position independently of which type of firm they are effectively working in. The mechanism outlined above does not imply the introduction of waged labour nor is capital given the rights of partnership which would give rise to the problem of underinvestment examined in the previous chapter.

With regard to the problem of growth, the cooperative under consideration, being unable, in common with all the others, to take on waged labour, would face two possibilities: to ask for new workers to be allocated from the ordinary cooperatives in the syndicate, or to take on new partners from outside. In the first case, the ordinary cooperatives would have to attract new partners to be allocated to the second-level firm, or alternatively to replace partners who had been delegated to it. In the second case, the second-level cooperative would have among its numbers both partner-workers and partner-cooperatives. In this context, the collective would consist of partners representing the cooperatives of origin, protected against risk in the way outlined above, and new partners without any such protection. This disparity would affect the propensity to undertake risky ventures which would differ across the two groups, and constitute a basis for conflicts in the firm's decisions. This consideration is sufficient to exclude the possibility of direct participation of workers in the second-level cooperative.

Thus, it is possible to conclude that, once again, introducing only a slight institutional modification of the simple theoretical model outlined in the literature, it is possible to see how a system of self-management could achieve

the beneficial results of capitalism, even though the latter has the advantage of at least two centuries of experimentation and improvement of institutional mechanisms to aid its functioning.

In particular, with the modifications outlined above, the following results were arrived at:

a. workers involved in high-risk activities are fully protected since they maintain all their rights as partners of the cooperatives of origin, and, in the case of failure of the venture, may return to the cooperatives initiating the venture;
b. the position of all the workers in the newly-formed syndicate are safeguarded. There is a diversification of activities which provides greater security and stability of incomes. This increases the potential to undertake new initiatives, decreasing in this manner overall risk aversion;
c. difficulties with raising finance for high-risk activities are reduced through the negotiation of loans at the syndicate level.

11.9 OPPORTUNISTIC BEHAVIOUR BY DEBTORS

Critiques similar to that of Drèze on the inevitability of the transformation of the self-managed firm into a capitalistic one, as will be seen in more detail in Chapter 12, are common in the literature on self-management,[23] even if the transformation is due to other factors. For Alchian and Demsetz, who consider a self-managed firm operating in a context in which the monitoring of the productivity of individual partners is costly, it is *moral hazard* which is the key element. Workers, aware that they cannot be fully monitored in their work, will behave opportunistically, reducing their effort. The cost of such behaviour, as is well known, will be borne largely by the collective and therefore individuals have an incentive to adopt it. In such a context, the firm needs to hire a 'supervisor' who must be paid the residual so as to discourage him/her from shirking. Thus is born the figure of the entrepreneur, and the firm, whether it wants to or not, becomes capitalistic (Alchian and Demsetz, 1972).

However, the process does not end here because, on close inspection, the very same entrepreneur-supervisor, protected by the limited responsibility generally prevailing in such cases, may adopt free-riding behaviour to the detriment of those financing the firm, reducing entrepreneurial effort or undertaking excessively risky activities (Eswaran and Kotwal, 1989).

Thus, free-riding behaviour applies to both workers and (non-capitalist) entrepreneurs. In the first case, the worker reduces his/her effort, hiding him/herself among the group of workers and reducing in this way the productive efficiency of the firm. In the second, the entrepreneur, not being a capitalist and therefore not having a stake in the firm, reduces his/her entrepreneurial input threatening the efficiency of the firm, or alternatively uses the capital with which he/she has been entrusted in excessively risky operations increasing in this way the probability of the firm's failure.

In the more recent literature, it is suggested that the self-managed firm will be subject to both forms of opportunistic behaviour. Indeed, it is impossible to deny that a partner-worker in a self-managed firm may behave opportunistically, seeking to work less than his/her companions. However, it should not be forgotten that the capitalistic firm suffers from this problem to a greater degree in that the incentives for shirking by employees are undoubtedly greater given the underlying conflict of interests between workers and the firm. Indeed, the latter has designed ever more efficient means to monitor the performance of individual workers which, if necessary, could also be employed in a cooperative. To suggest that the transformation of a capitalistic firm into a cooperative leads to the elimination of the entire supervisory structure of the firm is clearly an error. It is important not to confuse the *political structure* of the firm with its *administrative structure* (Bowles and Gintis, 1994). In changing from a capitalistic firm to a self-managed one it is clearly the first of these which must change, not necessarily the second. Consequently, the attention given to this problem is perhaps excessive.

Things are different when one turns to the second form of *moral hazard*, which concerns the entrepreneur-debtor. In this case, a partner in a cooperative is likened to the neo-classical entrepreneur who borrows capital, whose security may be threatened if, with a system of limited liability and with costly monitoring of the entrepreneur's behaviour, he/she employs it in an improper manner or reduces his/her entrepreneurial effort. Indeed, the more recent literature, in an attempt to explain the prevalence of capital over labour in the control of capitalistic firms, tends to lay greater emphasis on this form of opportunism rather than that of the worker, in clear contrast with the seminal thesis of Alchian and Demsetz.[24] One needs to ask therefore, if, in an LMF type of self-managed firm, there will be debtor (that is, partner) *shirking* as may occur in traditional firms with non-capitalist entrepreneurs.

It should first be noted that the situation of a partner in a cooperative is not comparable to that of a capitalist entrepreneur. The former is tied to the firm by a double link in as much as he/she is both worker and partner. In his/her role as worker he/she is concerned above all to earn a small but stable income, sufficient to satisfy his/her primary needs. This is precisely what Drèze maintains in emphasizing the risk aversion of workers (Drèze, 1989 and 1993). This is in contrast to the behaviour the partner should adopt in his/her second role, that of entrepreneur-debtor, characterized by a greater casualness in the use of capital.[25] The two opposing tendencies should lead to fewer excesses in either direction.

But this is not the only reason to reassure third parties regarding the trustworthiness of LMF-type cooperatives. A crucial element is the fact that the partner-worker may also finance the cooperative in which he/she works. Indeed, it was suggested above that the key characteristic of the LMF consists in the absence of contribution of venture capital by partners and by the prohibition on self-financing, understood as the reduction in dividends paid by the firm in order to finance its own activities. Consequently, the cooperative under examination must seek funds on the market issuing bonds or obtaining credit from banks. As has been seen in previous chapters, partners of the firm may also be creditors, for example, purchasing bonds issued by it. Indeed, the amount of funds which they contribute to the cooperative in which they work will be an index of the faith they have in it and will therefore act as a signal to banks and other potential external sources of finance. A firm which boasts of substantial financing on the part of its partners, and who are therefore financially involved in it, even if in the role of creditors, will be able to command greater trust on the market compared to a firm which is not able even to raise funds among its own partners.

Loans by partners in a cooperative have the same significance as venture capital in a capitalistic firm. It should be emphasized, however, that this is only valid in as far as it is a signal of faith for third parties. Loans provided by partners, as all others, are rewarded with a predetermined rate of interest and are not linked to the success of the business. On leaving the firm, a partner remains in possession of the credit until the loan is extinguished or until it is sold on the market. Furthermore, as was seen in the previous chapter, the existence of internal financing does not create conflict between partners due to differing time horizons, in that profits are distributed in their entirety and subsequent financing is an individual act which is decided autonomously by each partner and not by the majority of them acting as a group.

11.10 WHO OWNS THE SELF-MANAGED FIRM?

With the proposal discussed in the previous section, the firm is financed by borrowing capital from its partners at market rates of interest; and capital raised in this way is rewarded in the same way as external loans, with a fixed income, not a share of the 'residual'. This helps to clarify (or to reaffirm) that the relevant distinction to be made between different types of self-financed firms is not that between firms which are financed externally and those which rely on self-financing, but rather that between firms in which capital is remunerated independently from labour and firms where, in the distribution of income to partners, no distinction is made between labour and capital incomes.

Once the distinction between different types of self-managed firms has been identified in this way, it becomes clear that the self-financing firm is effectively a firm which borrows funds from its partners on the basis of a free individual choice, before looking outside for loans. Capital raised in this way should be seen as loaned capital both because workers receive a fixed return on it, and because those leaving the firm do not lose the amount invested.

In this way we arrive at a delineation of an 'ideal type' of the self-managed firm, namely the LMF of Vanek, where capital, both internal and external, is remunerated with a fixed income paid before labour income. The firm may or may not finance itself on a voluntary basis, and labour is rewarded with the 'residual'. This is a type of firm of which it is correct to say labour employs capital and which, therefore, achieves a true overturning of the capital–labour relationship. But, who owns this firm?

Given that the capital which finances the LMF-type firm is entirely loaned capital, and, given that partners are not obliged to contribute capital to their own firm on becoming a partner or later, the ownership of the firm, or more precisely the ownership of the capital goods in the firm, may not be attributed either to workers or to the capitalists who finance it. The ownership of the capital goods may not be attributed to capitalists for obvious reasons, but nor can it be attributed to workers because they contribute, at most, loans to the firm, contribute, that is (if they decide to do so), capital which is not only rewarded with interest rather than dividends, but which is taken away by workers when they leave the firm. Furthermore, the attribution of ownership to the workers would imply that they could sell at will their share to others outside the firm which might well not be to the tastes of the existing partners, as has already been seen.

The self-managed firm might assume legal status so that the ownership of the means of production could, if necessary, be attributed to the firm itself. But this, obviously, does not exhaust the issue since it remains to clarify what would happen to an LMF firm and its capital goods if the workers decided to abandon it or if the firm should go bankrupt. It would appear clear, therefore, that ownership of the firm, under a system of self-management of the type we have outlined, not being attributable to either workers or capitalists, cannot but be attributed to the state or to a public company.[26]

According to Grossman, Hart and Moore, the firm is one with the goods it possesses and ownership of it confers the residual right of control over the goods of the firms (Grossman and Hart, 1986; Hart and Moore, 1990, p. 1120). Those who accept this definition may not find convincing the statement that the self-managed firm is owned by the state. Those who, like us, believe that ownership of the self-managed firm should or must be attributed to the state, albeit admitting that such a concept of ownership is rather empty of content, arrive at this conclusion both, as was said above, because ownership cannot be attributed to the individual partners (given that they had, at most, contributed loans and given that they lose all rights in the firm as soon as they leave or are fired) and because the state should have 'residual rights of control of the goods of the firm' when workers leave it *en masse* (and also because it is opportune that the state is responsible in the last instance for the debts contracted by the firm). As will be further clarified below, an important problem to be resolved if the self-managed firm is to function correctly is what happens if the firm fails or if workers all abandon it because they find better jobs elsewhere. In this case, if the firm was owned by the workers, individually or collectively, they would dismantle it before leaving in order to sell off the goods singly to the first buyer, provoking serious damage to the collectivity. Capital goods are, for the most part, 'specific' to the firm and often can only be sold as scrap or, at least, at very low prices. Therefore, it is in the public interest that such firms are taken over by the state, before they are dismantled, to be assigned to such unemployed workers as would wish to manage them.[27] Furthermore, as was said above, the attribution of ownership of the firm to the state is of substantial importance in ensuring that the funds necessary for production are forthcoming (given that the state guarantees the debts contracted by the firm).

One way of ensuring that firms are not dismantled is to establish by law (as has been done in Yugoslavia) that firms may invest but not disinvest, that is to say, firms may not sell their capital goods, or they may do so only if they replace them with others of equal value. The prohibition on disinvestment provides an additional rationale for state ownership of the means of production.

11.11 ON THE PROPERTY RIGHTS OF PARTNERS

The conclusion at which we have arrived is perhaps surprising and deserves further discussion. The most surprising aspect of the argument outlined above is the conclusion that the self-managed firm must be owned by the state, not for ideological or political reasons, but because of the nature of the type of firm under discussion. Another surprising aspect of the discussion thus far is the fact that the LMF firm becomes, so to say, 'naturally' the property of the state without the need to expropriate anyone, and, furthermore, without any 'revolutionary violence'. The plant and machinery, bought by choice by the partners of the cooperative, would become the property of the state as soon as they were installed, because they cannot (or it is not opportune that they should) be owned either by partner-workers or by creditor-capitalists, nor can they be *res nullius*.

In order to clarify the issue, it may be put in the following terms. If all the capital of the self-managed firms has been acquired through loans, at any given time the firm has, on the credit side, the value of the capital goods at its disposal and, on the debit side, the loans received and not yet repaid. If, therefore, investment decisions were made with intelligence and caution, the present value of the plant and machinery will be larger than the value of the firm's outstanding debts and the firm will have a positive value. If, on the other hand, the investments were not successful and the efficiency of the firm is low, nothing prevents the debts from exceeding the credits, with the consequence that the net value of the LMF firm is negative.

The problem then becomes: to whom should be attributed this difference between credits and debits? In providing a reply, if one does not wish to undermine the character of the self-managed firm, one needs to retain the principle according to which all income produced by the firm is to be attributed to workers, with the obvious corollary that partners who leave lose all rights to that income; and, equally, it must be the case that no partner wishing to leave the firm may demand that the firm dismantles part of its machinery in order to pay him/her his/her share in the ownership of the firm.

In considering whether partners may own the LMF firm, one needs to ask oneself, above all, what would be the content of such property rights and, more specifically, what other rights could be given to workers in an LMF if they were recognized as its owners, beyond the right (which is not open to discussion) to receive the 'residual' and the rights going to them in their role as managers or 'users'of the firm.

During the period in which workers are partners in a cooperative, it is not clear what other rights could be given to them (beyond those they have as managers); in contrast, on leaving the cooperative the attribution of property rights to partners would give them, either the right to sell their 'position' to whomsoever they chose (as with the proposal of Sertel which has already been discussed) or the right to receive their share of the net value of the firm. As regards the sale of the position of partner, Meade has rightly observed that it seems obvious that a new partner should be allowed to enter the firm only if the following conditions are satisfied: (a) that the new partner wishes to enter; and (b) that the remaining partners wish to accept him/her (Meade, 1972, p. 414). But a free market in partnerships contradicts condition (b) and might, therefore, not be to the tastes of the partners of the cooperative (in as much as the new entrant would become a partner with full rights which might not be appreciated by the older partners). In this manner, one arrives at the paradox that, in order to give substance to the concept of the property rights of partners, one needs to attribute to them a right which they might not want. And, in effect, the literature on the question has not supported the idea that the position of partner be freely saleable on the market.[28]

As regards the cashing in of a partner's share, it would be necessary to give the partner his/her share of the net value of the firm (a share of the difference between the variation in the value of credits and debits that the firm has witnessed during his/her period as partner of the cooperative). But the valuation of a firm is so difficult and extremely open to question, as is well known, and would give rise to innumerable controversies if it were general practice. Furthermore, it is doubtful whether partners would wish to have this right, since obviously, for every partner who left there would be those left behind to pay him/her off.

The attribution of ownership to partners would not, therefore, better their condition;[29] and, in any case, the property right would be practically meaningless. Undoubtedly, as was noted above, if capital is owned by others, the rights of partners are similar to the legal category of users (Furubotn and Pejovich, 1973); but, in this case, there is no great difference between users and owners, as we have seen.

If, then, there are no specific advantages attached to the ownership of firms, why not give it to the state? Also as regards the guarantees to creditors, as is evident, the nationalization of the means of production has such advantages that it would be sensible to take advantage of the opportunity in a system in which, as has been argued, nationalization is *re ipsa*.[30]

NOTES

1. As has been observed, 'the legal structure of an LMF can be best understood by seeing it as designed to realize two normative priciples, the democratic principle of self-government and the labor theory of property' (Ellerman, 1992b, p. 168). On the second principle, see Ellerman (1986, 1990, and 1992a).
2. The members of the cooperatives in Mondragon in Spain do not own shares; and this is considered to be the main reason for their success (Whyte, 1991, p. 97).
3. For a brief description of the existing law in Italy regarding the property rights of partners in cooperatives and an analysis of proposed reforms of the same, see Zevi (1984).
4. It should be noted, however that, previous to Jay's work, the possibility of remunerating external capital in self-managed firms with variable income on the basis of the firm's economic activity had also been considered by, for example, Nutzinger (1975, p. 181), Drèze (1976, pp. 1133–5) and McCain (1977, p. 365).
5. On the possibility of remunerating external capital with a variable income dependent on the results of economic activity, see also Gui (1982, p. 267, and 1984).
6. This is what has been done in the cooperatives in Mondragon. One may therefore agree with Ellerman that the 'horizon problem is solved by the Mondragon system of internal capital accounts, which characterize the individual-equity LMF' (Ellerman, 1992b, p. 169; see also, Ellerman, 1986 and 1990). One may observe that in Ellerman, the system considered is, on close inspection, a system which attributes individual property rights to the current members of the LMF (Ellerman, 1982b, pp. 167–9).
7. On the sale of positions in the self-managed firm, see also Dow (1986) and Fehr (1993).
8. See, for example, Schlicht and von Weizsäcker (1977).

9. As will also be recalled, Sertel who, more than anyone else, has supported the idea of giving partners the rights to sell their 'share' on the free market, admits that the sale of his/her share by a partner must be subject to the approval of the remaining partners.
10. In a self-managed firm, the partners tend to be linked to the firm for reasons which go beyond the economic investment they have made in it (Furubotn and Pejovich, 1973, pp. 284–5).
11. The earliest, extremely well-known, contributions to the theory of implicit contracts are Baily (1974) and Azariadis (1975). For comprehensive surveys of the literature on implicit contracts, see Azariadis (1979), Hart (1983), Schwartz (1983), Rosen (1985), Salituro (1985), Hart and Holmström (1986) and Guidi (1987).
12. Drèze finds 'paradoxical' and 'surprising' his own conclusions that workers in a self-managed firm would be indifferent between stipulating a contract with the financers as to the dividends to be paid under various circumstances to the providers of capital and an employment contract which specified the amount of labour to be supplied and the wages to be paid under various circumstances (Drèze, 1989, pp. 92–3, and 1993, p. 260). Under conditions of perfect information both contracts may always be specified in such a way as to produce the same outcome, but if the risks associated with the activity are not known, the difference between the expectation and outcome would in one case be to the detriment of the financers and in the other to the detriment of workers.
13. We are thinking here of the merchant bank which, undertaking an activity which is mainly concerned with offering credit, intervenes in moments of greatest risk in the life of a firm, underwriting large amounts of capital which are then disposed of, often in smaller slices, in the market.
14. This criticism is of limited importance in as much as the capitalistic firm guarantees workers a stable income only in the short run while the business has good prospects. If this is not the case, a crisis in the firm implies immediate redundancies among employees. It is not easy to see why workers should prefer a situation in which they are subjected to the risk of losing their jobs without having any influence on entrepreneurial decisions over a situation involving essentially the same degree of risk but where there is the possibility of taking part in decisions concerning the firm.
15. On this necessity, see what Meade (1989) had to say in a similar context.
16. According to Bonin (1985), although LMFs increase the chances that a worker's income falls below a certain level, they reduce the chances that a worker will be fired and, therefore, the latter effect compensates the former.
17. It is assumed that the quantity of work is the same for all workers, that is, hours of work are the same for all.
18. The fact that the second-level firms are constituted to undertake particularly risky activities implies that the overall riskiness of the group lies somewhere between that attached individually to the two types of firm.
19. The syndicate is composed of all the cooperatives with shares in the second-level cooperatives (and which, therefore promoted the initiative) as well as the second-level cooperatives themselves.
20. It will be recalled that workers employed by the second-level cooperatives are still partners in the ordinary cooperative of origin.
21. See Chapter 9, Section 8.
22. This might occur if, for example, the income generated by the new firm does not differ greatly from that of the syndicate as a whole.
23. See, among others, Alchian and Demsetz (1972), Eswaran and Kotwal (1989), Cugno and Ferrero (1991) and Bowles and Gintis (1994).
24. See, for example, the lucid analysis of Eswaran and Kotwal (1989).

25. See Eswaran and Kotwal (1989) and Bowles and Gintis (1994).
26. This would be, naturally, a rather void form of ownership; but, one could also say of the publicly-owned capitalistic enterprise that even if it is everyone's property, it is really nobody's property (Bardhan, 1993, p. 146).
27. If it is true that Williamson, Klein et al. made the important observation that firms are important when they come to making specific investments (Hart and Moore, 1990, p. 1120), then the problem is to ensure that the firm remains (with its specific investments) even when there are no more workers. It is for this reason that it is appropriate that self-managed firms are owned by the state. The state, in taking over the abandoned firm, would have to value it and pay the workers' collective who leave the sum corresponding to the firm's calculated worth so that the debts of the firm borne by its workers are reduced.
28. See, for example, Gui (1982, p. 258). Sertel's important book is entirely based, undoubtedly, on the existence of partners' right to sell their 'share' on the free market (Sertel, 1982); but even Sertel admits that the transferability from person to person of the role of partner must be limited and subject to the approval of the remaining members (Sertel, 1982, p. 14).
29. Since, in a self-managed firm, workers have complete control over resources while they are operating within the firm, but no rights once they leave, workers in a cooperative should perhaps be more correctly called 'partners' in, rather than 'owners' of, the firm (Ellerman, 1990, pp. 74–6).
30. On the issue discussed in this section, see Weisskopf (1993, pp. 126–7).

12. Neo-institutionalism and the cooperative firm

The world is only just beginning to be ready for the higher work of the cooperative movement. (Marshall)

12.1 INTRODUCTION

A reading of the recent survey on 'The Economics of Managing' suggests that, so far, research in the area has not provided an adequate explanation, based solely on the fundamentals of economics, of the conditions under which one should expect to see a hierarchical organization of firms (Radner, 1992, p. 1384). In this chapter, we argue that this affirmation is convincing, if by 'hierarchical organization' one means an organization in which power is not exercised from below. The affirmation is not convincing, however, if 'hierarchical organization' is taken to mean a pyramidal organization, where those on the higher rung of the ladder have the job of ordering and controlling those who are on the lower rungs. In fact, in all team production, if the individual product is not observable without cost, each producer has an incentive to undertake less than his/her due while pretending to do more (has an incentive, that is, to behave 'opportunistically') and this implies that in every firm it is necessary that above each person there are others who control. In this regard, then, what is the difference between a cooperative firm and a capitalistic firm?

In order to answer this and other questions, this chapter examines some aspects of the theory of the firm which are at the centre of attention of the recent neo-institutional school, particularly those related to production and monitoring incentives.[1] This helps to clarify why, in contemporary economies, capitalist firms tend to prevail over cooperative firms (at least numerically) and whether it is true that the latter are fundamentally biased towards the lack of solution of the free-riding problem.[2]

12.2 THE THEORY OF THE FIRM OF ALCHIAN AND DEMSETZ AND SELF-MANAGED FIRMS

According to a widely-held opinion, the theory of the firm of Alchian and Demsetz (1972) provides the most profound explanation of why, in the free-market economies, capitalistic firms tend to prevail, at least in numbers, over cooperative or self-managed firms. What is this explanation about?

The pioneering contribution of Alchian and Demsetz of 1972 is, first of all, a theory of the firm which explains why that coalition of producers that we call a firm comes about. As is well known, the idea of the two authors is that the firm comes into being primarily because team production is more efficient than the production of single individuals, that is, because the joint product of a team is greater than the sum of what would be produced by the individuals in the team, if each worked for him/herself.[3] 'It is common to see the firm characterized by the power to settle issues by fiat, by authority, or by disciplinary action superior to that available in the conventional market. This is a delusion' (Alchian and Demsetz, 1972, p. 777). The firm is born out of contracts and its disciplinary power does not differ, even minimally, from those which arise out of each freely stipulated agreement between two parties in the market. As the consumer who goes to the grocer may assign to him/her the task of procuring the goods that he/she desires, not returning to him/her if his/her requests are not fulfilled, in the same way an entrepreneur specifies what his/her employees have to do and they are free to leave if they do not like the task assigned to them.[4] 'To speak of managing, directing, or assigning workers to various tasks is a deceptive way of noting that the employer continually is involved in negotiation of contracts on terms that must be acceptable to both parties' (ibid.).[5] In what sense, then, does the relationship between an employer and his/her employees differ from that between a grocer and his/her client? In this regard the response of Alchian and Demsetz is that: (a) the firm is a team which performs a productive activity; and (b) it is an organization in which there is a centralized agent who makes contractual agreements with all other members of the team.

Team production is efficient if rewards to the members of the team are proportional to each member's productivity. However, a fundamental characteristic of the productive activity of a firm is that a worker may reduce his/her effort without his/her payment being affected, because it is difficult to measure the productive contribution of each single member of the team.[6] Therefore, there are two major problems for every firm, measurement of the productivity of various inputs and the remuneration of the inputs according to their productivity. In this regard, however, one needs to be careful about the direction of causation, because, while traditional theory maintains that the firm tends to determine earnings on the basis of productivity, Alchian and

Demsetz call attention to the fact that often the direction of causation is reversed, so that it is the specific system of reward which causes a particular level of productivity rather than vice versa.

In order to avoid the reduction of effort (shirking) of workers,[7] each firm requires the specific job of the supervision and control of the output of various members of the team, and this job is entrusted to a centralized agent – the entrepreneur – who appoints and dismisses all other members of the team, makes contractual agreements with them and ensures that everyone carries out his/her duty well. But who controls the controller? In the 'classical' capitalistic firm the problem is resolved by giving the centralized agent the right to appropriate the difference between revenues and costs, thus creating the incentive for the entrepreneur to perform the assigned job well. So, for Alchian and Demsetz, the fact that in classical capitalism the entrepreneur is remunerated with a variable income, profit, the exact difference between revenue and cost, is due not to the fact that the one who becomes an entrepreneur is more inclined to take risks, as Knight has argued in his famous contribution (Knight, 1921), but rather primarily to the fact that this kind of remuneration implies the presence of someone who controls and measures the productive contribution of all the members of the team.[8]

In short, the central idea of Alchian and Demsetz is that it is the entrepreneur who assumes the task of monitoring the activities of the members of a team and that for this the entrepreneur must be rewarded with an income which is related to the functioning of that team.[9]

This theory, in the opinion of its authors, provides an explanation of why, in the world which we inhabit, firms tend more often to organize in a capitalistic rather than in a cooperative manner. According to Alchian and Demsetz, in fact, if profit is not assigned to the one who has the job to control the work of others but is divided in given measure among all the workers, the latter will have more interest in carrying out their jobs well, but the controller will have less interest in his/her own, and it is probable that the reduction in productivity due to the weakening of control will be greater than the increase in productivity due to the smaller incentives that individual workers have to work with reduced effort (Alchian and Demsetz, 1972, p. 786). All the more reason to believe, therefore, that if all the profit is distributed among the workers as occurs in cooperatives, bringing an end to the specific function of controlling gives rise to a reduction in productivity despite the greater interest the workers have in the efficiency of the firm.[10]

For Alchian and Demsetz, this does not exclude the possibility that profit sharing can sometimes be advantageous. Given the predominance of profit sharing and cooperative types of organization in those firms where a relatively small number of members assume an 'active role' in the team (that is, members who feel particularly responsible for the results of the communal activities), profit sharing is believed, and the facts support this belief, to be particularly advantageous in small firms. Moreover, profit sharing in small firms is also favoured because here it is easier to have efficient reciprocal control over various participants engaged in productive activities. 'Monitoring need not be entirely specialized', write Alchian and Demsetz (1972, p. 786), and therefore can be entrusted to all workers.

The cost of measuring the productivity of a member of a team increases if it is difficult to correlate the productivity of an individual with his/her behaviour. This applies particularly to the activities of professionals or artists over whom control, by rule, does not make sense. So, lawyers, doctors, advertising agents and other such producers for whom exact productive measurement is particularly difficult (but who none the less have incentives to work in groups) are the ones who more easily make profit-sharing contracts or enter into partnerships to form cooperatives.[11]

12.3 CRITICISM OF THE CONTRIBUTION OF ALCHIAN AND DEMSETZ

The basic idea underlying the analysis of Alchian and Demsetz, that, in their relations with employees, entrepreneurs do not have more power than anyone else who enters into contracts in a market is contradicted by most of the related theories, which maintain that the firm is a hierarchical structure where specific investments, of which we will talk shortly, have great importance (Williamson, 1975, pp. 67–70). Daems, for example, observes that the affirmation of Alchian and Demsetz, according to which the firing decision of a manager is analogous to the decision to change supplier, is not correct because for various reasons the cost of finding a new job is much greater than the cost of finding new suppliers (Daems, 1980). However, Alchian has changed his ideas radically on this problem, to which we return shortly (Alchian, 1984 and Williamson, 1986, pp. 241–2).

The affirmation of Alchian and Demsetz would be true if there were no transaction costs; but, if there were no transaction costs, there would be no firms and all transactions would take place on the market, as Coase (1960) argued. This allows the formulation of another very general criticism of Alchian and Demsetz which may be expressed in the following manner. As we said, if transaction costs were nil, there would be no firms; but this amounts to saying that, if there were no transaction costs, firms would be useless and, therefore, 'in the absence of transactions costs, any enterprise will operate efficiently regardless of how rights to participate in its management decisions may be assigned' (McCain, 1992, p. 206). This implies that the reason for which capitalistic firms tend to prevail over self-managed firms is not that identified by Alchian and Demsetz but rather lies in the existence of transaction costs.

This is, in any event, an argument which deserves to be considered further elsewhere. Here we wish to focus attention on the problem of monitoring. As noted above, for Alchian and Demsetz this constitutes the principal obstacle to self-managed firms. But is the analysis of Alchian and Demsetz convincing?

The first objection to the analysis of these authors is derived from the criticism of the idea that the employer does not exercise power over workers. Many studies have shown that forms of monitoring, as with the division of labour and other forms of organizational structure, are not chosen just for reasons of efficiency, but also to maintain and reinforce the authority of the employer (Marglin, 1974; Braverman, 1974; Edwards, 1979; Putterman, 1982; Bowles, 1985; and Marginson, 1993).

Another objection[12] to the analysis of Alchian and Demsetz consists in pointing out that if the function of controlling is entrusted to all workers of the firm, as is believed to happen in cooperative firms, each partner has less interest in performing well the function of control than a single controller who appropriates the entire residual; but the function of control is not performed only by one or a few individuals specifically assigned the role, but rather by all the partners of the firm and a hundred eyes see better than one. In other words, where the function of control is left with the partners, no one has a particular interest to perform the function of control well, but, at the same time, since each partner is both controller and residual claimant, all of them have some interest in controlling others (for example, Miller, 1993, p. 306). There is no reason to believe that a single controller with a substantial incentive to control will be able to do his/her job better than many controllers with smaller incentives.[13] Also in self-managed firms where there is no specifically assigned controller for monitoring, controllers are residual claimants; and probably this is what counts most.[14]

The problem that we are talking about, one might say in line with Bowles and Gintis, derives from the 'market failure' which arises because, given the immeasurable character of effort, the contract between employer and employee cannot specify all the different aspects of the job. The capitalistic firm in a competitive labour market generally resolves this problem by paying a salary higher than the 'reservation wage', nominating controllers and using the threat of firing in order to obtain the desired effort. But this is not a solution which leads to a Pareto optimum. Instead, the self-managed firms rely on the fact that the ' residual claimants' are the workers and are thus able to overcome the difficulties related to the incomplete nature of the job-contract, so that, generally, they obtain a degree of efficiency in the productive activity which is not obtainable in the capitalistic firm (Bowles and Gintis, 1994, p. 210).

The greater effort due to the fact that workers themselves are residual claimants is called the 'direct residual claimancy effect' by Bowles and Gintis. It is particularly relevant in small firms, because, as we know, the revenue that the self-managed firm earns is divided among a smaller number of workers. Therefore, each worker of a little self-managed firm knows that only a small part of the increased revenue due to their increased effort will be attributed to him/her. Besides this effect there are other reasons for which the self-managed firm is more efficient than its capitalistic twin.

The first of these is that in the self-managed firm workers work with more effort because they feel that they are the owners and are therefore responsible for the firm.[15] It is well known that one who works for him/herself derives much more satisfaction from his/her job than those who work for others. Furthermore, workers of the self-managed firm identify themselves more with the firm where they work and for this reason fear being fired to a greater extent (for example, Gui, 1993, pp. 74–7 and 80). On both these grounds there is reason to believe that more effort will be put into a given job in the self-managed firm than in the capitalistic firm. This may be called the 'participation effect' (which is different from, but easily confused with, the residual claimancy effect, Bowles and Gintis, 1993b, pp. 27–8) and to which we will return to shortly.

Second, he/she who decides together with others feels both more responsible for the common decisions and a sense of loyalty towards the other workers, thus inducing him/her to work harder (Oakeshott, 1978, and Horvat, 1982). One might call this, using Hirschman's terminology, the 'loyalty effect'.

Third, workers in a self-managed firm can themselves perform effective reciprocal monitoring. In fact, workers in a firm have costless access to much information on the job activities of their colleagues and can, therefore, easily discover who performs their assigned work with effort and who does not.[16] This may be called the 'reciprocal monitoring effect' (Bowles and Gintis, 1993b, p. 28), the existence of which appears to be confirmed by empirical research (Fitzroy and Kraft, 1986).[17]

An important aspect of the monitoring performed by members of the cooperative firm is that it is does not require a specific outlay by the firm. So, compared to the capitalistic firm, there is a saving of resources in the cooperative firm (since it does not have to appoint personnel specifically for monitoring) which can be utilized to perform other activities and this allows, therefore, an increase in efficiency (for example, Gui, 1993, pp. 72–4).

One should also note that, in order to induce workers to exert the required effort, the capitalistic firm not only uses monitoring and the threat of firing, but often also pays a wage greater than the reservation wage of workers. As has been observed, this is another cause of inefficiency in capitalistic firms.

But perhaps the principal objection to the analysis of Alchian and Demsetz is that, if members of a cooperative have an incentive to nominate a controller, they may well do so, as the experiences of the Israeli Kibbutz or the Spanish cooperative of Mondragon confirm (Putterman, 1984, p.173 and Elster and Moene, 1989b, p. 28). The free-rider argument, in fact, suggests that the self-managed firm should nominate someone who draws a profit from performing well the job of getting all the employees to work with due effort, but nothing prevents cooperatives from doing so.[18] The argument of Alchian and Demsetz, write Eswaran and Kotwal, 'would entail a profit contract being offered to the appointed monitor but would not inhibit labour from hiring capital' (Eswaran and Kotwal, 1989, p. 162).[19]

But this objection does not exhaust the issue. It remains to be seen whether the one who performs the function of monitoring may be remunerated with a fixed income or instead must necessarily be the 'residual claimant'.

Regarding this, however, empirical evidence shows clearly how baseless is the thesis according to which the monitoring function is performed effectively only if the person assigned has the right to appropriate the difference between costs and revenues. In fact, in a corporation, very often property is separated from control and the function of monitoring is performed by managers. In the corporation, observe Alchian and Demsetz, the job of controlling managers and avoiding their inadequacy in controlling and measuring the productive effort of all members of the team is entrusted to competition by aspirant managers who may be from inside or outside the firm. In other words, in corporations the job of controlling the managers is entrusted to the right of the shareholders to replace the existing managers with new ones, if the former do not perform their job well (Alchian and Demsetz, 1972, p. 788).[20] But the same may be said of self-managed firms where, if member-workers have entrusted someone with the job of monitoring, they may send him/her away if he/she does not perform his/her duties well.[21]

Alchian and Demsetz put a lot of weight on the fact that in a corporation with diffused ownership, if the manager is not up to the job, it is possible and, indeed, probable that a group of shareholders is formed which comes together to direct the decisions of the board of the company and which would not hesitate in firing the manager who does not perform his/her job well. In such a case, power blocs of shareholders would take away all the residual decision-making power of the smaller shareholders and would transform the affairs of the corporation into a classical firm with both ownership and control in the hands of the same person (Alchian and Demsetz, 1972, p. 788 and Demsetz, 1988b, pp. 197–200).[22] But even these considerations are not a sufficient reply, because the group of shareholders who take control of the corporation and can send away the inefficient manager works in the same way as the members of a self-managed firm who assume control[23] and who after having selected a controller may sack him/her if he/she is incompetent.[24]

The same Alchian and Demsetz (among others), however, have pointed out that the efficiency of managers is not based only on the appropriation of profits on their part but also depends on other competitive mechanisms.[25] It is observed that there is competition among managers from both within and without. A manager who does not work in the interest of his/her shareholders and lets his/her firm lose efficiency would not have much chance to pursue his/her career in other firms, even if he/she is not discharged by his/her first firm. To make a career, a manager not only has to defend the interests of his/her actual employers but also to make others aware of his/her capability. Thus, a manager who tolerates the 'opportunistic' behaviour of his/her subordinates and causes his/her firm to lose potential profits also damages his/her reputation with neighbouring firms and is, therefore, less likely to receive offers from other corporations (Alchian and Demsetz, 1972, pp. 781–3 and Alchian and Allen, 1983, p. 188).[26]

Thus, it emerges from the above discussion that it is not necessary to pay the manager a variable income in order that he/she be efficient. There is, therefore, no reason to believe that a cooperative must be less efficient just because the manager who is monitoring the work is on a fixed salary, and even less so if the manager has a share in the earnings of the firm (Fitzroy and Kraft, 1987a).[27]

12.4 ON-THE-JOB CONSUMPTION AND THE EFFICIENCY OF COOPERATIVES

In connection with what has already been said, there is another point that requires discussion. Demsetz has argued at length that the separation of ownership from control has important implications for the type of monitoring performed (Demsetz, 1988b). As a rule, it is suggested that the difficulties of monitoring are greater in big firms and, therefore, in corporations, which are generally large firms (for example, Demsetz, 1988d, pp. 203–5). It is argued, moreover, that where there is separation of property from control, the job of monitoring is performed less well because of the lack of incentives for the manager to maximize the profits of shareholders. These two reasons ensure that corporations are less efficient than firms in which managers also happen to be the owners.

Demsetz does not share this conclusion. He maintains that the separation of ownership from control leads to a greater specialization of the two functions, which can give rise to more (not less) efficient monitoring. The owner-manager, he says, spending most of his/her days at the place of work, is inclined to make his/her life pleasant, maintaining above all a good rapport with his/her employees. Moreover, he/she may decide to have a beautiful office, with paintings on the walls and a comfortable easy-chair for reading newspapers and may prefer to have employees with the same skin colour or the same religious ideas or in any case people similar to him/her to chat with. For these and other reasons it could, then, be argued that the owner-manager would not be a particularly attentive or severe monitor and would tend to make his/her job more pleasant than lucrative. The pleasures of life in the office are 'on-the-job consumption' and Demsetz rightly observes that, as every type of income is spent for consumption at home, so a part of the income of the firm may be sacrificed (with a rational calculation) in order to have greater on-the-job consumption.[28] Let us suppose, then, that while remaining the owner, he/she decides to entrust the function of control to others. In this new situation he/she would no longer enjoy on-the-job consumption and, therefore, his/her choice will be rational only if his/her overall utility is greater than before. If we suppose that his/her earlier on-the-job consumption was greater than the disutility of directly managing the firm, his/her choice will be rational only if his/her consumption at home is greater than before. This implies that the separation of ownership from monitoring can only be a rational choice if it results in an increase in profit, and, therefore, in the patrimonial value of the firm.

The increase in the patrimonial value of the firm, it should be noted, could also be realized by a manager with the same organizing capability as the previous owner-manager. Supposing that it is easy to monitor[29] the on-the-job consumption of the manager, the owner could replace him/herself with another manager of the same capability and overall remuneration (in cash and kind), who prefers to earn higher pay performing better at the job of monitoring and engaging in less on-the-job consumption (compensating with the higher remuneration in cash the lower remuneration in kind).[30]

In short, in order to make his/her activities more pleasant, an owner-entrepreneur may employ, for example, beautiful but less efficient girls, and in such a case would be content with a lower profit. This the manager who is not an owner cannot do, because, if he/she acts in this way, he/she would be sacked by the owner (who will see profits falling). This implies that the separation of ownership from control, far from making the firm less efficient, may increase its profit.

To approach the problem from a different point of view, suppose that the corporation, being a big firm, is characterized by acute difficulties in monitoring the entrepreneurial function. In such a case, managers of the corporation, knowing that they will not easily be found out, may pursue their personal aims (for example, maximization of turnover *à la* Baumol) at the expense of profit. But, if profits fall, the shareholders may no longer want to finance the firm and

the manager's job will, consequently, be at risk. Therefore, managers who want to pursue their personal goals will be content with lower pay, compensating their relative inefficiency with lower remuneration (and thus avoiding the fall in profits). Therefore, the rate of return on invested capital and the efficiency of the firm where ownership is separated from control would not be less than in firms managed by the owner.[31]

What are the implications of this for the theory of self-management?

First of all, supposing that the job of monitoring is jointly performed by all members of the cooperative, a clear consequence of what has been said would be that whoever works in a cooperative would like to engage in a substantial amount of on-the-job consumption to make his/her life more pleasant. Demsetz distinguishes between observed consumption which reflects personal tastes and hidden or surreptitious consumption – shirking – which is due to the existence of the costs of monitoring (Demsetz, 1988b, p. 192). In the cooperative one would expect, above all, the first type of on-the-job consumption because the members agree to make the life at work more pleasant in many ways: improving the working environment, reducing excess specialization, reducing the pace of the work, loosening reciprocal control (because he/she who is less severe in controlling his/her neighbour would, in return, be subject to less severe control by that neighbour). Observed consumption, being extended to all members of the firm, will reduce the profitability of the firm per unit of assigned work, but does not pose any particular problem, because we know that the cooperative firm tends to maximize the utility of the members and not the monetary income (see Section 6 of Chapter 9), and the members of the cooperative know that the greater is the on-the-job consumption the lower will be the monetary income that they earn. Given, however, that members have the possibility of choosing between greater consumption at work with lesser monetary income and greater monetary income with lesser consumption at work, it is clear that they will choose consumption at work only when it is obtainable more easily than consumption at home.

For this aspect of *observed* consumption at work, we arrive at the important conclusion that, even if apparently less efficient (because it results in a lower monetary income), in reality, the cooperative may be more efficient than the capitalistic firm because it allows consumption at work at a lower price.

But what about surreptitious consumption at work, that is to say, shirking?

It was suggested above that if members of a cooperative exert less than full effort in their work, part of this may be due to observed on-the-job consumption, that is, the tacit agreement to work at a slower rate to make the job more pleasant. But each worker might also take advantage of the difficulty of monitoring to work even less than the average, that is, less than the other members have consented to: this is shirking.

So far we have not distinguished between the consumption at work of members of the cooperative and that of managers, since we were concerned with observed consumption. When it comes to surreptitious consumption, however, the distinction is fundamental. The parallel may be drawn between a firm with an owner-manager and a cooperative which entrusts one of its members with the task of monitoring. Given that the member-manager-supervisor is chosen by a majority of other members and given that generally all the important decisions in a cooperative are taken by an assembly of members, the manager-supervisor of a cooperative is in a position which is more similar to that of the manager of the corporation than to the owner-manager, as was observed above. But this implies that what Demsetz has to say regarding the manager of the corporation (who cannot have a lot of on-the-job consumption, otherwise he/she would be sacked) may also be applied, with little modification, to the manager-supervisor of a cooperative who will not be able to impose his/her personal aims on the firm. In the cooperative, of which we speak, ownership is separated from the control and from this it follows, as Demsetz has argued, that the job of monitoring is performed better than in the traditional capitalistic firm and thus the cooperative, rather than being invariably less efficient in monitoring than the owner-manager firm, may actually be more efficient.

In other words, the manager of a cooperative, in contrast to the owner-manager, cannot allow him/herself surreptitious consumption at work with impunity, because he/she would necessarily enjoy it to the detriment of others (who would notice the reduction of the efficiency of the cooperative). If he/she does, he/she risks being sacked. But then if the manager does not shirk, the cooperative will be efficient.

As far as shirking by non-managerial staff in the self-managed firm is concerned, it is important to observe that, since (by definition) it is hidden behaviour, it is particularly odious in a firm where the workers are and feel to be among partners. This provides strong support for the notion that in the self-managed firm there is less shirking. In other words, in capitalistic firms, surreptitious on-the-job consumption by a worker is opposed by the entrepreneur, but it is not opposed by, rather it may get the approval of, fellow workers (who consider controllers as enemies to be beguiled). In contrast, in the self-managed firm shirking is opposed both by the monitor and by other workers and, we repeat, is considered a particularly reprehensible behaviour, because it is damaging to all and sundry.[32]

Therefore, it does not seem that the free-riding problem constitutes a strong objection to the cooperative firm. On the basis of what we have said, it seems, indeed, that it is reasonable to share the view that workers in a democratic firm are residual claimants and this gives a relative advantage to democratic firms in extracting productive effort from the workers (Dow, 1993b, pp. 117–18, and Bowles and Gintis, 1994, p. 210). This is the opinion of Stiglitz, who observes without mincing words, that the cooperative enjoys an advantage, given that workers are also co-owners, because in it workers have more interest in the fortunes of the firm and a greater incentive to exert themselves in their work (Stiglitz, 1993, p. 541). Indeed, this idea finds support in empirical studies in which 'shirking by workers is never reported as a concern in studies of real world producer cooperatives' (Bonin, Jones and Putterman, 1993, p. 1303).[33] But this problem calls for further discussion.

12.5 ASSET SPECIFICITY AND THE EXISTENCE OF THE FIRM

Another explanation for why firms tend to be of the capitalistic type concerns what is called these days asset specificity, a term that was introduced or reintroduced into economic analysis by Williamson (1971, pp. 122 ff., 1975, pp. 26–8 and 90–93, 1983 and 1985, pp. 30–32 and 88–9).

Investments are called 'specific' or 'idiosyncratic', when, once made, resources involved can only be transferred to other activities with a loss of value. There are specific investments in capital goods as well as in human capital. There are investments specific to a craft, to a locality, to an industry or to a single firm.[34] According to Alchian and Demsetz, a successful firm is always the result of specific investments. If the sum of values of single inputs is less than the overall value of the team, it means that time and resources were employed to make the choice of the components of the team in such a way that they will be able to work well together (so much so that if the single inputs were to be transferred elsewhere, they would lose their overall value).[35] Acquisition of a computer is a general investment, whereas installation of a blast furnace, which cannot be dismantled without cost, is a specific investment. Time spent in learning a trade is an investment in human capital specific to that trade, but general for the firms where it is employed. The experience gained in one firm of coordinating the precise work of others is an investment specific to that firm (for other examples, see Williamson, 1985, pp. 95–6).

By definition specific investments are risky (because their cost cannot be recuperated without loss, if contracts are interrupted ahead of time). The difference between the value that an asset has because of its site-specificity and the value that it would have if transferred elsewhere is called the 'quasi-rent' of specific investment (Klein et al., 1978, p. 116). Consequently, an investment is general if it does not generate quasi-rent and specific if it does. If there are two or more specific inputs in a firm, the quasi-rent earned by any one of them and, therefore, the value of each depends on the existence of other inputs. If one of the inputs can be replaced only at increased cost and lower quality, when that specific input is removed, the earnings from other inputs will decrease. But the quasi-rent of a specific asset may also depend on the behaviour of another input even if it is not specific, if monitoring of this input is difficult and costly. For example, if a proofreader does not do his/her job properly, the reputation and earnings of a writer may suffer. This poses the problem, does the quasi-rent that a specific investment can potentially earn justify the strategic risk due to the fact that its cost is not fully recuperable, if the contract is interrupted before time? (Williamson, 1985, p. 54).

By their nature, quasi-rents may be expropriated when the inputs that earn them are distanced from the firm. Consider, in particular, an investment in human capital, partially firm-specific. The training expenses may be borne by the firm or the worker. If investment in the training expenses of the worker is partly general and partly specific to the firm then there are risks of expropriation by both parties. In fact, if the expenses have been met by the firm, the worker can appropriate some of the revenue of the investment in his/her human capital not specific to the firm, by leaving the firm and asking for a higher salary elsewhere (for the higher level of training he/she has acquired). If, on the other hand, the expenses are met by the worker, the firm can appropriate some of the revenue of the investment in human capital of the worker that is specific to the firm, refusing to increase the worker's salary.

The risk of expropriation for the worker naturally is removed only when there is nothing to expropriate, either because the investment is completely general and the training expenses are fully met by the worker or when the investment is entirely specific to the firm and training expenses are met completely by the firm. But in the last case it is the firm which risks expropriation, because the worker may demand a higher salary threatening to leave and causing the firm to lose all the benefits of the investment. Nor does the solution to the problem lie in dividing the expenses of the training between the firm and the worker, making the worker pay his/her quota for general training and the firm for the specific part, only raising the salary of the worker in line with the increase in revenue arising from the general investment. It is true that in such a case, the worker would not have any incentive to leave the firm, because elsewhere the increase in his/her salary would correspond only to the revenue from the general investment, and the firm would not be disposed to refuse an increase in salary fearing that otherwise the worker would look for a job somewhere else. This does not resolve the problem, however, because the worker would be in a position to demand that nearly all the quasi-rent accruing to the specific investment should be awarded to him/her through increased salary, threatening otherwise to leave the firm (and causing the firm to lose all the benefits of its specific investment).

The solution to the problem lies, rather, in subdividing the cost of the specific investment between the firm and the worker, because in such a case both stand to lose if the worker leaves (whether voluntarily or as a result of being sacked), given that the specific investment is a sunk cost.

Traditionally, the theory of the firm has distinguished between fixed and variable costs. Williamson observes that this is a book-keeper's distinction and is less important than the distinction between specific and non-specific costs. The existence of specific costs gives rise to what Williamson has called the 'fundamental transformation'. Suppose, he writes, that initially there are a lot of bidders in competition with each other. If there are no specific investments, the bidder who wins and stipulates the contract with the firm will continue to be in competition with the other bidders who failed to win the round, but once the transaction is done and important specific investments are made in goods and services which matter, the initial competition disappears, because the initial situation of equality among the bidders is altered and the winner comes to enjoy a privileged position. This implies that the *ex ante* competition, that is, competition which has taken place before the transaction, will remain also *ex post* only if no specific investment has been made in the goods and services in question (Williamson, 1985, pp. 61–3 and 1986, pp. 146 and 239–42).

Marshall, the father of the idea of 'quasi-rents', was well aware of the importance of asset specificity to be found in every firm. Subsequently, for many years neo-classical theory did not attach importance to the fact that investments and learning processes often make the resources specific to the firm. But with the neo-institutionalism of the last two decades the situation has changed radically and the principle of asset specificity today has been made all the more important by being seen as an explanation for the existence of the firm (Alchian, 1984. pp. 34–49; Williamson, 1986, pp. 239–42; Pagano, 1992a, p. 234). This, however, was already implicit in the ideas of Alchian and Demsetz because to say that a firm that functions well is always the result of specific investments or, from the economic point of view, an input which is not specific is not part of the team in which it works, implies that the principle of asset specificity provides an explanation of the existence of the firm.

But what has all this to do with the choice between capitalistic and cooperative firms?

12.6 INVESTMENT IN HUMAN CAPITAL AND THE COOPERATIVE FIRM

The idea that the principle of asset specificity is an explanation of the existence of the firm has already been mentioned. It requires little to pass from this to the notion that the factor which is the most specific to a particular firm tends to become its owner. This is the central idea of the model associated with the names of Grossman, Hart and Moore (Hart and Moore, 1990, pp. 1122–4)[36] and with the contribution of Klein et al. (1978).

The point of departure for the theory of Grossman, Hart and Moore is the idea that ownership and control coincide. The original formulation of the model found in Grossman and Hart (1986) identifies a firm with the capital goods that it possesses and argues that ownership confers residual control on the patrimonial activities of the firm (Hart and Moore, 1990, p. 1120). The ownership of any good, according to this conception, confers the power to exclude others from the use of the good. As we will see shortly, this right of exclusion leads indirectly to the control of human capital. In other words, the central aspect of property is to guarantee the owner control over the goods which are necessary for him/her to enjoy the results of his/her activities.

This conception of property explains the existence of firms and their greater or lesser degree of integration. In fact, according to Hart and Moore, to an agent, the crucial difference between the possession of a firm (in the case of integration) and the contracting of a service with another party who possesses his/her own firm (in the case of non-integration) is that, if there is integration, he/she can selectively sack the workers of the firm, if he/she judges it right to do so, whereas, if there is no integration, he/she can only abstain from entering into a contract with both the other party and his/her entire workforce (ibid.). Consequently, in the case of two individuals who collaborate using the same capital good, transferring the ownership of the good from one to the other increases the freedom of action of the new owner in the use of the good and increases, therefore, both the proportion of the surplus which he/she will receive and his/her incentive to improve the quality of the good and his/her capacity to use it profitably. On the other hand, the portion of the surplus that the expropriated owner will receive and his/her incentive to dedicate him/herself to his/her job will fall. Thus the costs and benefits of an integration can be seen as two sides of the same coin (ibid.).

This conception of the firm based on property rights is directed towards the role of physical rather than human capital. Rights of control, however, are also important both because they influence the contractual strength of the two sides of the labour relation, and consequently, the division of the surplus of the firm, but also because they influence incentives to invest in physical as well as human capital. The last influence explains why the merger of two firms produces ambiguous benefits. While, in fact, the one who acquires the other firm will have a greater incentive to invest both in physical and human capital, the owner of the acquired firm loses his/her rights of control and will, therefore, have less incentive to invest. As far as the workers are concerned, then, they will attribute more importance to the objectives of an agent, if the latter controls the goods with which they work (Hart, 1989).

This is not to say, observes Hart, that what counts is not control over physical capital but rather organizational control, as others have maintained. The control of capital goods, in fact, may lead to the control of human capital also in the form of organizational capital (Hart, 1989).

Therefore, as Stiglitz rightly observes, according to this conception the essence of property lies not in the right to the residual revenue but in the right to residual control – all the rights to do particular things with available goods which are not stated in the contract belong to the owner; that is to say that if the contract does not *oblige* the owner to do a particular thing, he/she can do whatever he/she likes with his/her goods (Stiglitz, 1994, p. 165).

This explains the fundamental difference between capitalistic and cooperative firms regarding the problems of surplus and incentives. If a capitalistic firm is transformed into a cooperative, then the control of the capital goods passes from the old proprietor to the collective of workers and the results in terms of efficiency cannot be predicted *a priori*. In fact, supposing, for the sake of simplicity, that after the transformation into a cooperative the old managers remain at their posts, a clear consequence of the above discussion is that, because of the transfer of control to the workers, the old managerial group will see a reduction both in the portion of the surplus which they will receive and their incentive to work well, whereas, now, the surplus accruing to workers will increase, as will their incentive to produce more and to invest in human capital.

The question then arises as to why should the more specific factors in a firm tend to be its owners? The answer to this, naturally, lies in the fact that the owners of the specific assets of a firm are more subject than others to the increase and decrease in the value of their assets according to the success or failure of the firm.

In more detail, the owners of the specific assets of a firm know that the value of their assets is closely bound up with the circumstances of the firm; if the firm fails or they themselves are removed, then the value of their assets will suffer a loss. This induces them to make themselves actively interested in the life of the firm, to follow its choices and to give it direction. However, this cannot be said of the owners of general assets, because they know that if the firm in which their assets are presently situated no longer needs them, then there will be other firms willing to employ them on the same conditions. The proprietors of specific assets, therefore, if unable to control the firm, will try to stipulate insurance contracts, when they invest their resources. This explains why they are more interested in controlling the firm than the owners of general assets and why, therefore, they are willing to pay more to procure the ownership of the firm.

Obviously this has implications for the choice between capitalistic and cooperative firms. To clarify this point we need to recall that, as noted above, the tie between the worker and the firm is stronger and more lasting in cooperative than in capitalistic firms. To the general considerations regarding the 'effect of participation', of which we have already spoken, we should now add others. Cooperative firms, it may be said, tend to be more heterogeneous as a group than capitalistic firms. Workers who have the same tastes and propensities tend to group themselves in the same firm; and, as for new entrants, every worker will naturally choose the firm which is organized in the way that he/she most likes. In cooperatives, workers themselves decide how to organize the firm, thus increasing the bond between them and the firm, and the bond is also strengthened because everybody knows or hopes that he/she will be able to influence decision-making through his/her vote in the assembly.[37] It has already been observed that in capitalistic firms the workers who are not satisfied with their assigned job or the work environment do not have any choice but to leave the firm. In contrast, in cooperatives apart from 'exit', there is also 'voice' to use the terminology of Hirschman. In cooperatives, therefore, the possibility that workers may modify the organization of the firm ensures that the mechanism of 'voice' tends to prevail over the mechanism of 'exit' and, consequently, the average permanency of a worker in a firm tends to be higher (Cable and Fitzroy, 1980; Gui, 1993, pp. 80–81; and Rooney, 1995).[38]

Another implication is that cooperatives will tend to invest more in human capital than capitalistic firms and it further follows that in cooperative firms investment in human capital will be more specific than that in capitalistic firms (Gui, 1993; pp. 74–7; see also Crawford, 1985; and McCain, 1992, pp. 213–14). But when the investment in human capital is abundant and specific, labour tends to be an asset more specific to the firm than capital and owners of the firm tend to be workers rather than capitalists.

Therefore, there is no reason to suggest that the organization of the firm tends more often to be of a capitalistic type because, by definition, capital is an asset more specific to the firm than labour. This is true in today's situation when there is underinvestment in human capital; but it would not necessarily be true in a society where more favourable conditions are created for investment in human capital.

This demonstrates the existence of a process of circular and cumulative causality according to which specific investment in human capital tends to favour the formation of cooperative firms and the increase in the number of cooperatives tends to favour the specific investment in human capital.

If all this is true, numerous contributions by Ugo Pagano and other economists usually belonging to the radical left on monitoring and the analysis of factors specific to the firm represent a powerful critique of the theory of Alchian and Demsetz (Braverman, 1974; Marglin, 1974; Edwards, 1979; Bowles, 1985; Pagano, 1991a, 1991b, 1992a, 1992b; Marginson, 1993, pp. 149–53; and Bowles and Gintis, 1993b, pp. 6–7). These authors have inverted the orthodox reasoning, according to which the ownership of the firm goes to the proprietors of the factors that are more difficult to control and/or that are more specific to the firm, and argue that the given set of property rights determines the major or minor difficulties of controlling the revenue from different assets and their degree of specificity. According to the 'radical economists', the characteristics of the assets employed by a firm are determined by the rights that the owners of different productive factors have in its organization. In other words, according to the radical theory, the difficulty of controlling assets and their degree of specificity to a given firm are the *consequences* rather than the causes of the existing structure of property rights.

12.7 MONITORING AND RESIDUAL CLAIMANCY ACCORDING TO BARZEL

One theory of entrepreneurship which implies the greater efficiency of capitalistic firms with respect to cooperative firms is that of Barzel, which is closely linked to that of Alchian and Demsetz. Its central idea is that the entrepreneurial role, as the active part in the labour contract and supervision and as residual claimant, is assumed by the person whose contribution to the common effort is the most difficult to measure (Barzel, 1987a, p. 103; for a similar opinion, see also Grossman and Hart, 1986).

For Barzel, the entrepreneur has the role of collecting information, choosing the best initiative from many options, forming a team of collaborators who work well together, making the best possible contracts with individuals outside the firm and so on. Therefore, he/she performs all those tasks whose efficiency is particularly difficult to evaluate; and, according to Barzel, this difficulty is a decisive factor in assigning him/her the role of residual claimant.[39] The outcome of entrepreneurial activity depends to a substantial degree on good or bad luck or, at least, on factors largely beyond the control of those who perform this activity; and, it is the difficulty in establishing to what extent an outcome is due to the circumstances over which there is no control rather than to the capability of the one who runs the firm that ensures that the one who performs this function must be the residual claimant.

When many people collaborate in a productive activity, Barzel argues, there is a possibility of opportunistic behaviour, and productive output depends on the form of remuneration and on supervision. Making him/her the residual claimant who supervises and letting him/her take all the risks of the economic activity ensure that the entrepreneur will have a strong incentive to perform his/her job well, a job which others are unable to observe directly.[40] It also ensures, therefore, that the productive efforts of those who carry out tasks which are easier to evaluate are supervised effectively.[41] Given that the entrepreneur-supervisor's expected return is a function only of his/her contribution, his/her incentive for opportunistic behaviour disappears and it does not matter whether the component of chance is difficult to isolate (Barzel, 1987a, p. 104).

Moreover, Barzel observes, to persuade others to collaborate productively, the entrepreneur must invest his/her own capital in the firm, because only if he/she risks his/her capital he/she will be able to convince others that he/she does not systematically prefer high-risk initiatives with a possibility of high returns to initiatives with higher average expected revenue. To understand this point better, one must distinguish between risky activities whose outcome depends only on external circumstances and activities which are more or less lucrative according to how well the entrepreneur performs his/her job. In the first case, the capital can be borrowed relatively easily because whoever lends evaluates the risk and is ready to take the consequences. In the second case, on the other hand, external financing is more problematic. In this case, the entrepreneur must convince his/her backers that he/she has made (or will make) profitable choices and that he/she will perform his/her job well, despite the fact that it is difficult to observe his/her behaviour. In this case, the return on the investment will depend on the entrepreneur's ability and the type of investment that he/she chooses, and it will be necessary, therefore, that he/she should be able to convince the financiers that the investments have a good possibility of a high return. The entrepreneur can contribute to this objective by investing his/her own capital, because the fact that he/she is ready to risk his/her own funds will provide convincing evidence to the external financiers that he/she will perform his/her job with the utmost attention and will not choose particularly risky investments in search of huge earnings.

In this case, the expected return of the project is not itself a parameter, but rather an endogenous variable and the expected return of the project will depend on the size of contribution of the entrepreneur (Barzel, 1987a, p. 113).

Self-financing, observes Barzel, performs another function which explains why it is usually capital that employs labour and not the reverse. As a rule, returns to the firm vary with economic conditions and workers fear the sack most during the downswing in the business cycle. But, laying off workers implies that part of the installed productive capacity remains idle, and if the plants are the property of the entrepreneur it will thus also damage the entrepreneur. The plants are underutilized only if the entrepreneur is committed to not reducing the wage when economic conditions are unfavourable; if it were not so, the entrepreneur would find it preferable, if needs be, to pass the entire burden of the crisis on to workers, employing them at lower wages and while maintaining capacity utilization of his/her plants. In other words, because of the rigidity of wages, in a recession one sees both unemployment and the underutilization of plants and, therefore, the cost of the recession is sustained both by workers and owners.[42] Consequently, wage rigidity is a form of insurance for workers against getting the sack too easily (to be substituted by workers at a lower wage) in the case of a crisis; and workers feel more secure, if the firm is financed, at least in part, by the entrepreneur's capital, since in this case laying off workers will also damage the entrepreneur.

The explanation of the wage rigidity provided by Barzel is different from the traditional one, attributed to Knight, according to which wages are rigid because those who are more risk averse and those who are less risk averse gain a mutual benefit by fixing the wage in the work contract: the less risk-averse agents assume the role of entrepreneurs and employ as their employees the risk averse, promising them a fixed revenue, and reserving for themselves the surplus of the productive activity which is a variable earning.

This is a central point for the theory of cooperatives and self-management, because it supports a traditional criticism of the idea that 'workers become their own entrepreneur', the criticism according to which workers have no interest in self-management because they prefer a fixed income dependent on others rather than a variable income from self-employment.

12.8 CRITICISM OF BARZEL'S THEORY

The theory of Barzel undoubtedly raises an issue of great importance and enriches the interpretation of entrepreneur as supervisor proposed by Alchian and Demsetz. However, it is not very convincing. Barzel says that the contribution of the entrepreneur is particularly difficult to measure. But the objection could be raised that, if the responsibility of the overall outcome of economic activity is attributed to the entrepreneur, his/her contribution can easily be measured on the basis of the profits realized by the firm. The entrepreneur is responsible both for his/her actions in his/her external relations and for the activities of every worker. His/her fundamental job is undoubtedly to control all those whom he/she has chosen. This signifies that he/she alone is responsible (as is popularly believed) for the success or failure of the firm. But, if this is true, it is clear that the contribution of the entrepreneur can be measured on the basis of the outcome of the productive activity in terms of the level of profits. Barzel rightly observes that the outcome of productive activity also depends on chance, on circumstances outside the control of the entrepreneur and that the problem remains of separating what is due to the entrepreneur's choice from that due to external circumstances. But precisely because of this difficulty in determining the true cause of success or failure, the entrepreneur, for the role that he/she covers, is held solely responsible for the outcome of the firm.

However, this does not at all imply that a share of profits must be paid to the decision-maker. He/she might equally receive a fixed income, since, precisely because he/she is held solely responsible for the outcome of the firm, he/she risks being sacked every time the firm registers a failure. The entrepreneur can be compared with the manager of a soccer team. Even if the position of the team in the league table does not depend solely on the manager, as a rule, it is he/she who pays for everyone's errors. The manager of a soccer team is also paid a fixed income; but this does not alter the fact that he/she is induced to work with utmost effort, for the risk of losing his/her position (and to see his/her reputation tainted) pushes him/her to try to perform his/her job in the best possible manner.

In the cited paper, however, Barzel himself puts forward the idea that for each worker the consequences of job loss are more serious than those arising from a reduction in his/her income, and this consequently ensures that a worker under threat of being laid off performs his/her job with more effort and more efficiently than the one who fears a reduction in income. He writes, 'expectation of a layoff, however, produces greater income variability and lower income than expectation of a wage reduction produces, and a risk averse person prefers lower-wage employment to unemployment' (Barzel, 1987a, p. 111). Why, then, does he say that the person who makes the decisions should receive a variable income?

That the threat of unemployment is an 'instrument of discipline', it may be added, was suggested by Kalecki half a century ago (Kalecki, 1943) and is currently commonly found in efficiency-wage models (Calvo, 1979; Shapiro and Stiglitz, 1984; Bowles, 1985).

This argument is supported by looking at the corporation, in which the decision-maker is paid a fixed income and the 'residual claimants' are the shareholders. In the corporation, the managing staff perform their jobs well because they know that if the firm does not do well they will lose their jobs. Also, in the corporation, as is well known, the role of residual claimant is not given to those who perform the more difficult job of monitoring.

Though Barzel himself admits that he has taken into consideration only a particular type of firm (Barzel, 1987a, pp. 103–4), it is important to be clear that his theory cannot be seen as a general explanation as to why capitalistic firms tend to prevail over cooperative firms.

We would particularly like to draw attention to one of Barzel's arguments. It was noted above that, for Barzel, wage rigidity is the cause of the underutilization of capacity. But in self-managed firms, by their very nature, the returns to labour are variable. And this, as has been noted, is a strong argument in support of self-management, because it implies not only that there cannot be involuntary unemployment, but also that the consequences of economic crises for systems based on self-management would be less grievous than under capitalism.

12.9 THE PROBLEM OF TAKE-OVERS

We observed above that it is more reasonable to compare the self-managed firm with the corporation than with the traditional capitalistic firm. This allows us to overcome the objections related to the separation of ownership from control in cooperatives. In corporations, however, it has been argued that the separation of ownership from control does not create problems because managers know that incompetence on their part will expose them to the danger of a take-over, that is, the danger that the current proprietors will be replaced by the new purchasers of the firm who will not hesitate in laying off inefficient managers. The self-managed firm, on the contrary, by its nature, cannot be bought by anyone. And this poses the problem: does the absence of take-overs make the self-managed firm inefficient?

It was suggested above that the efficiency of a manager in a corporation is guaranteed by the existence of two different markets, the labour market for managers and the capital market. This suggests that if out of two mechanisms of control one does not happen to be effective, then there is always another to guarantee the effort of the manager for a good management.[43] Moreover, it should be borne in mind that the purpose of many take-overs is not to increase the efficiency of the firm, and that the beneficial effect, in terms of efficiency, arising out of the take-over by means of a merger between the firm which is acquired and the firm which acquires could equally well be achieved in a self-managed firm by means of an agreed merger of the interested firms. Take-overs occur for various reasons: to get rid of inefficient managers; to exploit possible synergy; to achieve greater monopoly power in the market; for defensive reasons and so on. But the inefficient managers, we repeat, may also be fired in self-managed firms and the other objectives may also be achieved by means of mergers between self-managed firms.

The literature on take-overs generally expresses the opinion that the improvement of efficiency through take-overs works badly and slowly. It also throws light on the fact that the practice of take-over is typical of the Anglo-Saxon world and is not so diffused in Europe or in Japan.

It has been calculated that in the United States the premium for take-overs is of the order of 50 per cent of the market price (Jensen, 1989). This suggests that the inefficiency of a manager must be very apparent for potential buyers to realize it and initiate the take-over. This is in any case obvious because of the substantial asymmetry of information: the manager is in a much better position to obtain information on the causes of the firm's problems than the outside observer. But this cannot be said for self-managed firms, where the management of the firm is controlled by its workers and where, therefore, there is no need for take-overs by outsiders to replace inefficient managers.

Stiglitz has observed that there are at least four reasons why the take-over is not an efficient mechanism of control. First of all, the poor output of a firm may be due to bad management but also to difficulties of a different nature. As noted above, as the result of information asymmetries insiders know much better than outsiders how things really stand.[44] This gives rise to the problem of free-riding noted by Grossman and Hart (1980). In the case of a public offer of purchase, if those who have the control of the firm are inclined to sell it, then there is reason to believe that it is due to the fact that whosoever is taking over is paying a lot, more than the firm is worth. If, on the other hand, those who are trying to take over offer less than the firm's worth, those who have majority shareholding will not be prepared to sell it. But this implies that, by their very nature, take-overs are successful only when they are not worthwhile.

The second reason pertains to the expenses that need to be incurred in order to know whether attempting a take-over is worthwhile or not. These expenses, as a rule, are anything but negligible and are made at the risk of doing bad business. When a firm that has carried out extensive research to find out which firms are badly managed makes its choice and makes an offer for a take-over, other firms which were mere onlookers until then will become aware that there is a killing to be made and they will also make offers. In equilibrium the entry of these successive bidders will bring their profit to zero (according to the usual rules of competition), but this means that the profits of the firm which has incurred the cost of research finally will be negative.

The third reason for which take-overs do not work as they are supposed to is connected to the problem of free-riding. When a take-over is a success and the market value of shares goes up, all the small shareholders who did not sell their shares make profits; but since every small shareholder believes that his/her behaviour will not influence the outcome of the take-over, it means that they have no incentive to sell. Thus, a group attempting a take-over will be able to buy up shares dispersed among many small shareholders only if the general prediction is that the share price is going to fall after the take-over. On the other hand, if the group attempting the take-over has a good reputation, it is unlikely that people will predict a fall in share prices following the take-over.[45]

The last reason for which the take-over is an inefficient mechanism for control lies in the fact that managers of a firm are often in a position to take strategic action to discourage those who attempt a take-over (Stiglitz, 1972a, 1972b, 1975 and 1985, pp. 137–9). According to this argument, as a result of information asymmetries, managers may have an incentive to send out misleading information signals by, for example, distributing more profit to the

shareholders than is appropriate given the situation of the firm in order to make their management appear profitable and discourage take-over bids.

Finally, it may be observed that the inefficiency of take-overs is supported by numerous empirical studies which show that the returns are not always positive (see, for example, Frank et al., 1988 and Hughes, 1989).

These arguments concerning the inefficiency of take-overs lead to a more general finding in that they lead one to conclude, in line with Stiglitz, that one of the two main reasons why the faith in market socialism should have become reinforced in recent years following the results of debates on this matter is that discussions of the principal–agent problem and on the separation of ownership and control have largely come to the conclusion that the form of ownership is not a decisive factor in the good management of a firm (Stiglitz, 1993, p. 24 and 1994, p. 20).

NOTES

1. For discussions of the case in which the individual product is observable without cost, of relatively minor interest, see the comprehensive study of Cugno and Ferrero (1991, pp. 194–206) and Archibald (1992, Chapter 11).
2. Williamson writes: 'One of the implications of opportunism is that "ideal" cooperative modes of economic organization, by which I mean those where trust and good intentions are generally imputed to the membership, are very fragile' (Williamson, 1985, p. 64). On the free-rider problem, see the survey by McMillan (1979). See also, for example, Williamson (1975, pp. 7–10 and 26–30, 1985, pp. 47–52 and 64–7), Holmström (1979, 1982), Prescott and Townsend (1984) and Bollino and Di Pietro (1991).
3. Team production of a good Z implies that there are at least two *inputs*, X and Y, and that $\partial^2 Z/\partial X \partial Y \neq 0$.
4. The consideration that neither the employer nor the worker are obliged to continue the renewal of contractual rapport indefinitely has urged Alchian and Demsetz to say that 'long term contracts between employer and employee are not the essence of the organization we call firm' (Alchian and Demsetz, 1972, p. 777); but, as Williamson has observed, Alchian has since abandoned such a conviction (cf. Alchian, 1984, pp. 38–9; Williamson, 1985, p. 53, note 11 and 1986, pp. 241–2).
5. These assertions of Alchian and Demsetz constitute a critique of Coase's theory of the firm, which is shared by Hart (1989, p. 158), but which Alchian has since abandoned (see below).
6. The reduction of the effort to do the job (shirking) becomes the same as the reduction of the pain of work, that is, with the increment of the pleasant aspects of what one does on the job. Because of this, Demsetz defines shirking as 'the amount by which on-the-job consumption, given positive monitoring cost, exceeds the amount of consumption that would take place when modelled with zero monitoring cost' (Demsetz, 1988b, p. 192).
7. It is difficult to define shirking precisely. Furubotn (1985) assumes that there will be shirking whenever the marginal product of effort is greater than zero. But this is clearly too broad a definition (McCain, 1992, p. 212).

8. More recently Demsetz has nevertheless recognized that a greater part of the ideas contained in the 1972 paper had been anticipated by Knight (Demsetz, 1988c, pp. 163–4, note 6).
9 According to Demsetz, the central idea of the 1972 article was to show how it is possible to explain different forms of organization of the firm in terms of the differences in the needs of monitoring arising from them (Demsetz, 1988c, p. 153).
10. See, for example, Jensen and Meckling (1979, p. 485).
11. Among those who, for different reasons, sustain that shirking is more prevalent in self-managed firms, see Carson (1977), Jensen and Meckling (1979), Putterman (1982) and Dow (1986).
12. We consider only objections which are of more specific interest to economists, neglecting criticisms of a political or psychological nature, such as of those who observe that the arguments being discussed here reflect a profound distrust in democratic process (Weisskopf, 1993, p. 131). An objection of a very general nature is raised by Hart (1989, p. 159) who observes that the theory of Alchian and Demsetz is subject to a similar criticism to that which the two authors hurl at Coase: it is not clear why the problems of team production and control must be resolved across the firm and cannot be resolved across the market.
13. Archibald observes that, 'it is not, however, obvious that people would much care to work in an environment in which everyone is to watch his fellow worker, look over his shoulder, time his absences in the washroom ... The "company" monitor might be preferred, being perceived as a common enemy' (Archibald, 1992, p. 121).
14. Alchian and Demsetz observe that their analysis is based on the implicit 'auxiliary' assumption that the cost of team production increases if the residual claim is not received exclusively by the central *monitor*. This is equivalent to the assumption that, 'If profit sharing had to be relied upon for *all* team members, losses from the resulting increase in central monitor shirking would exceed the output gains from the increased incentives of other team members not to shirk' (Alchian and Demsetz, 1972, p. 786; emphasis in the original). But the assumption is badly formulated because the quantities to be compared are, on the one hand, losses due to the greater shirking of the central controller and, on the other, gains due to the minor incentives to shirking by the other team members *as well as* the gains due to the exercise of the function of control by all members of the team.

    Following Alchian and Demsetz, Cugno and Ferrero also have taken for granted that 'the capitalistic form' is 'the only one to be able to provide adequate incentives to the monitor' (Cugno and Ferrero, 1991, p. 207).
15. As noted by Putterman (1984, pp. 174 and 176–7), Alchian and Demsetz ignore the fact that for many workers being controlled has a psychic cost and can have a detrimental effect on morale and performance.
16. From the technical point of view, whether centralized monitoring is more efficient than reciprocal monitoring depends on the nature of the task to be performed (Putterman, 1984, pp. 173–4).
17. Empirical evidence generally finds that the participation of workers in decision-making increases productivity (for example, Jones and Svejnar, 1985b; Estrin et al., 1987; Mygind, 1987; Conte and Svejnar, 1988 and 1990; Levine and Tyson, 1990; Chillemi and Gui, 1992; Defourny, 1992; Thomas and Logan, 1992; and Bartlett et al., 1992). For more sceptical opinions see, for example, Vroom (1964, pp. 181–6), Gallagher and Einhorn (1976, pp. 367 and 371–3), Fitzroy and Kraft (1986, 1987a and 1987b), Thodarson (1987) and Craig and Pencavel (1995). For two good reviews, see Jones and Pliskin (1991) and Bonin, Jones and Putterman (1993).

18. Olson has observed that, just as the state cannot survive on the basis of voluntary contributions alone, similarly no firm of any size can do so without sanctions and gratifications, above and beyond those derived from greater or smaller degrees of pursuing the 'public good', for which purpose individuals participate in the organization (Olson, 1965, p. 16).
19. The proposal to nominate an external controller to control the members seems to Archibald 'a sad outcome, particularly to those who think cooperation a social arrangement morally preferable to capitalism for purposes of production' (Archibald, 1992, p. 121).
20. Alchian and Demsetz also observe that the task of controlling the controllers cannot be attributed only to competition among aspiring managers, because the new manager who replaces the one who was not performing his/her job well, might become a bad controller him/herself, as he/she would also have an interest in shirking (Alchian and Demsetz, 1972, pp. 781–2). Here, however, Alchian and Demsetz overlook the argument according to which fear of unemployment works as a strong incentive to perform well (see, for example, the survey of Yellen, 1984).
21. The idea that the efficiency of the socialist firm has to be compared with the efficiency of the corporation, and not to the efficiency of the classical capitalist firm is argued in Lange (1936–37, pp. 108–10) and Bardhan and Roemer (1992, pp. 106–7).
22. The idea that the control over managers may be performed by shareholders is not credited much these days. The control of the way in which managers perform their tasks is indeed costly, because the necessary information needs to be collected. Therefore when shareholding is dispersed, shareholders are not keen on taking this cost on themselves, not only because each one of them knows that his/her vote is of little importance in the decision-making process but also and principally because they know that the benefits of hiring a more efficient manager would be limited by the share quota they retain (and know, therefore that the benefits from collecting information do not repay the costs) (Alchian and Demsetz, 1972, pp. 788–9; Stiglitz, 1985, p. 136; and Romani, 1992, pp. 19–20).
23. According to some authors, self-management may present a free-riding problem in the monitoring of managers because, while in the corporation there are controlling groups which decide for everybody (and the decision to dismiss a manager is taken only by a few people), in the self-managed firm power is so diffused that nobody has a stronger incentive to control the manager than all the others (Jensen and Mecklin, 1979 and Putterman, 1993b, p. 139). However, it is likely that leaders and majority or controlling groups also arise in firms which are based on the principle of 'one person, one vote'.
24. As has been observed, the *central* problem of incentives usually discussed in connection with market socialism, that is, the problem of managerial incentives, seems to be a no lesser problem in capitalism (Stiglitz, 1994, p. 103). Or, of more direct relevance to our problem, it has been observed that the control exercised by workers in the LMF and that of shareholders in the corporation have many similarities. In particular, the relatively large number of people who retain the rights to control and the efficient delegation of managing and control functions to skilled personnel. The existence of such similarities allows us to go a long way in answering the critics on the good functioning of a system of self-managing firms (Putterman, 1993b, p. 139). Putterman notes, however, that two potential causes of the bad functioning of the system are, first, that discussed in the previous note and, second, the absence of take-overs (see Section 9 below).
25. Bardhan and Roemer (1992, pp. 106–7) argue that under socialism, in order to control managers, it is easier and more appropriate to create a market for managers than a stock exchange or a capital market.

26. On the problem of incentives posed by Alchian and Demsetz, one has to agree with the observation of Bardhan and Roemer that the advanced capitalism of corporations has proved that complex principal–agent problems in the managing of the firm may be resolved. These agency problems are, perhaps, no less complex than those which the kind of firm proposed in the fifth generation of market socialism has to tackle (Bardhan and Roemer, 1993b, p. 9).
27. The critique addressed to the contribution of Alchian and Demsetz frees us from discussing the contributions of Holmström (1982), Rasmusen (1987) and McLeod (1991) which are linked to the analysis of Alchian and Demsetz but which discuss only the case in which individual productivity is observable without cost.
28. Demsetz gives the name 'amenity potential' to the on-the-job consumption which a manager may enjoy in the firm which he/she manages.
29. On-the-job consumption of the manager, Demsetz writes, is the more difficult to monitor the more unstable, unsteady, and turbulent is the environment in which the firm operates.
30. Demsetz writes, 'If the owner-manager or his employees desire to consume on-the-job, paying for what they consume, then their services can be acquired more cheaply by allowing such consumption than by barring it, for in such a case the cost of on-the-job amenities is smaller than would be the increase in take-home pay required to maintain identical utility levels for these employees' (Demsetz, 1988b, pp. 190–91).
31. For empirical evidence in support of this, see Demsetz (1988d, pp. 216–19).
32. On the problem discussed in this section, see also Dow (1993a).
33. For other empirical studies which demonstrate that shirking is reduced in firms managed by workers, see Estrin, Jones and Svejnar (1987) and Estrin (1991, pp. 358–62). Work on the productivity of cooperatives has also been undertaken by, for example, Jones and Backus (1977), Jones and Svejnar (1982, 1985b), Tannenbaum et al. (1984), Defourny et al. (1985), Jones (1987), Berman and Berman (1989), Levine and Tyson (1990), Grunberg (1991) and Jones and Pliskin (1991).
34. According to Williamson, there are four kinds of asset specificity: location specificity, specificity of capital goods, that one related to investments in human capital and to the learning processes, and that due to resource destination (Williamson, 1985, p. 55).
35. According to Alchian, strictly speaking, from an economic point of view an input which is not specific is not even part of the team in which it works (Alchian, 1984, pp. 34 ff.).
36. For an exposition and discussion of the model of Grossman, Hart and Moore, see Barca (1994).
37. As far as the loyalty of workers towards the firm is concerned, Alchian and Demsetz had already noted that it reduces shirking and increases, therefore, the efficiency of the firm (or reduces the cost of monitoring). 'If one could enhance a common interest in nonshirking in the guise of a team loyalty or team spirit, the team would be more efficient. In those sports where team activity is most clearly exemplified, the sense of loyalty and team spirit is most strongly urged. Obviously the team is better with team spirit and loyalty, because of the reduced shirking, not because of some other feature inherent in loyalty or spirit as such' (cf. Alchian and Demsetz, 1972, p. 790). This is an important argument in favour of the greater efficiency of cooperative firms.
38. According to Hirschman, 'exit' belongs to the field of economics, 'voice' to the field of politics. Exit is an impersonal and indirect mechanism, a typical mechanism of which economics avails itself. Voice, in contrast, is an explicit and direct manifestation of one's critical opinions, it is the political action *par excellence* (Hirschman, 1982, p. 314). This helps to clarify why voice is that much more important in the self-managed firm, which is certainly more democratic than the capitalistic firm. Hirschman observes that the economist naturally tends to think that his/her own mechanism is far more effective and as a matter of fact is the only one to be taken seriously (ibid.), and he points out how an economist completely in favour of the market, such as Friedman, at least at times, refers with contempt to the decision of expressing one's own opinions and to the effort of asserting them, when it is possible to have recourse to the alternative mechanism of exit (Hirschman, 1982, pp. 314–15). For Hirschman, on the contrary, exit and voice may operate side by side and support each other also in economic activities and institutions.

39. Contributions to productive activity which are difficult to evaluate, or more generally, behaviour of one of the parties to a contract which is difficult to observe are particularly subject to moral hazard, as is well known. According to Barzel, the famous concept of 'uncertainty' of Knight is non-insurable risk, because it depends on behaviour which is subject to moral hazard (Barzel, 1987b). But, he writes, when such risks are undertaken by the entrepreneur, the incentive for morally hazardous behaviour disappears (Barzel, 1987b, p. 118). However, he contradicts himself. If the risk undertaken by the entrepreneur is not subject to moral hazard, as Barzel suggests, it is no longer a non-insurable risk, that is, uncertainty *à la* Knight. In other words, Barzel's interpretation of Knight's concept of uncertainty is self-contradictory, because while he says that Knight derives uncertainty from moral hazard, he adds that the risk of the entrepreneur (which for Knight is uncertainty) is not related to moral hazard.
40. In similar vein, more than one author assert that cooperatives are unable to attract the best managers because of the better pay offered by the capitalistic firms (Jensen and Meckling, 1979; Horvat, 1982, p. 456; Putterman, 1982, pp. 157–8; and Gui, 1993, pp. 70–71).
41. Therefore it is fair to say that the role of the entrepreneur as supervisor proposed by Alchian and Demsetz is seen here as derived rather than primary (Barzel, 1987a, p. 115).
42. This provides an explanation of why in recessions both labour and capital remain idle (Barzel, 1987a, p. 114).
43. As observed by Estrin in the self-managed firm, workers have a direct interest in controlling effectively and therefore self-management by workers can also provide discipline of management when private capital markets are weak (Estrin, 1991, p. 354).
44. On this point, see the classic article of Akerlof (1970).
45. Grossman and Hart (1982) have observed that each small shareholder who forecasts that the take-over will raise the price of the company shares waits for others to sell first, but in this way nobody sells.

13. Self-management and the social foundation of character

During the winter, he had obtained a work on economics, the novelty of which consisted in the fact that the character of the worker was assumed as given, like the climate and the land, and where, consequently, all the theses of economic science were deduced not on the basis of information on the land and the climate, but rather on the basis of information on the land, the climate and the immutable characteristics of workers. (Tolstoy)

13.1 INTRODUCTION

As we have seen, socialism in self-management implies a system of firms competing among themselves and managed by the workers; and these days it is generally accepted that the general principle of behaviour regulating the economic activities of these firms is the maximization of the average income of all the workers working together.

The assertion of this principle, although long since known to cooperative theorists, was only rigorously formulated for the first time by Ward in 1958. It does not represent a discovery of a third general principle of behaviour, different from the two great principles which regulate human activities, individual egotism and the ethical motive; rather the principle of maximizing *pro-capita* revenue is nothing but the application of the principle of utility to cooperative economics. In fact according to the definition of Keynes (1979, p. 66), a self-managed economy is one 'in which the factors of production are rewarded by dividing up in agreed proportions the actual output of their co-operative efforts'; and, if this is true, the rational behaviour of anybody working in a self-managed firm, *if individual utility maximization is pursued*, is to try to maximize the overall revenue of the firm (since, together with the revenue due to other partners, he/she will also maximize the revenue which will be attributed to him/her).

In other words, the principle that we are talking about is not derived from the idea that, by nature, people are altruistic, but from the presupposition that, as a rule, people pursue their own utility. However, taking into account the specific nature of cooperative firms and their organizational principles, the

principle of maximum *pro-capita* revenue brings to light the fact that, in the firm managed by the workers, whosoever makes the effort to increase his/her own revenue simultaneously helps to increase the revenue of all his/her fellow workers: and, therefore, it is reasonable to believe that a system of cooperative firms, by its nature, would nourish feelings of solidarity and would contribute to the reduction of human egotism.

What one has in mind here is that, when productive activity is organized on the basis of cooperative principles, the workers of all firms guided by a common interest tend to acquire a solidaristic conscience, and 'the ambit of men's altruism', to use an expression of Keynes again, would be broadened (Keynes, 1931, p. 241). This seems to us to be one of the main arguments in favour of self-managed firms.

In other words, if it is true that all workers in a self-managed firm share the same outcomes and productive activity is organized in such a way that 'whenever someone increases his income, all benefit' (Myrdal, 1943, p. 45), there is reason to believe, we repeat, that in a society composed solely of self-managed firms, by the nature of the system, 'the ambit of men's altruism' would be broader and people would become less egotistical.

As Meade has written describing the functioning of his *Agathotopia* (a society based on principles of cooperation),

> The typical Agathotopian has a more cooperative and compassionate attitude in his or her social behaviour than is the case at present in the United Kingdom, where we have, alas, been subject for so many years to such a regime of devil-take-the-hindmost and grab-as-much-money-as-quickly-as-possible. This suggests that there is some positive feedback between social institutions and social attitudes. (Meade, 1993, p.106)

Hahn has written recently:

> one of the essential traits more relevant to capitalism is that its drawing principle is found in contradiction with the prevalent moral values. The Judaic-Christian moral system exalts the virtues of benevolence and sympathy towards one's neighbours and goes against greed, particularly the greed of wealth and tells us 'not to accumulate treasure on earth'. Characterising one's own motivation in pecuniary remuneration, in contrast to a sense of duty and consideration for others, is not considered worthy of admiration. Yet this is exactly what is asked of those working in the capitalistic system. (Hahn, 1993a, p. 10)

What we wish to suggest in this chapter, therefore, is that, in comparison to capitalism, a system based on self-management attaches less importance to the motive of greed and more importance to benevolence and promptitude for others.[1]

For those who accept this argument, it is perhaps superfluous to observe that the evaluation of the self-managed firm based solely on the criterion of efficiency loses much of its importance. This means that the comparison between the cooperative firm and its capitalistic 'twin', undertaken in Chapters 8, 9 and 10, constitutes only one of the elements supporting the comparative advantage of the system of self-management. This is implicit in most of what has been said so far. Those who accept the distinction (of Barry and Rawls) between *want-regarding* and *ideal-regarding* principles maintain that every effort to encourage some characteristic traits to the detriment of others makes a theory oriented towards ideal and not towards want (Barry, 1973, p. 46); and the theories that are not oriented towards want, such as the theory of justice of Rawls (1971, pp. 273–4), and Barry (1973, pp. 42–56) and those discussed here, obviously cannot give much weight to a comparison based exclusively on efficiency considerations.

13.2 THE SOCIAL FOUNDATION OF CHARACTER IN THE HISTORY OF THOUGHT[2]

As is well known, in 1845 in his celebrated VI thesis on Feuerbach, Marx wrote: 'but the essence of man is no abstraction inherent in each single individual. In its reality it is the ensemble of social relations' (Marx, 1845, p. 4).[3] And, in the much celebrated Preface to *A Contribution to the Critique of Political Economy* of 1859, Marx has reaffirmed: 'The mode of production of material life conditions the general process of social, political and intellectual life. It is not the consciousness of men that determines their existence, but their social existence that determines their consciousness' (Marx, 1859, pp. 20–21).[4]

Marx's radical opinion in this regard might not be shared: but it is not necessary to be a Marxist or a follower of historical materialism to accept the idea that the character and psychology of human beings are strongly influenced by the relations of production.

In tracing the outline of an ideal society, Plato had already suggested that it would be composed of two parts kept distinct from each other: on one side would be magistrates and warriors whose duty it would be to act in the public interest, on the other would be workers and artisans assigned economic functions. The fundamental principle of Plato's politics was that those who perform economic roles should be kept at a distance from those who perform functions related to the public interest, because all that one has and one does with wealth gives rise to an attachment to money and egotism and is the source of all corruption.[5] From that time on, the central communist idea – always basically the same, even if formulated slightly differently – is that private property is the source of all forms of egotism and that immorality arises out of egotism (Durkheim, 1928, p. 37).

Jean-Jacques Rousseau, among others, shared Plato's judgement on the corruptible power of money and not only affirmed the influence of social institutions on individual psychology but also attempted to analyse profoundly what he thought was an important aspect of social life. He wrote that human behaviour has social origins: private property and inequality generate feelings of rivalry, of hate and of envy and change our natural inclination to the extent that the origin of evil is completely attributed to society.

Like Rousseau, French philosophers of the enlightenment also strongly sustained the idea that the environment and society have a decisive influence on human behaviour. This idea was further developed by William Godwin and Robert Owen. Owen is perhaps the most convinced advocate of the thesis that the human 'character' depends on the environment and social institutions. He wrote this in his famous work on the new society (Owen, 1816) and his successive works were also based on this presupposition. His experience of industrial life in Manchester, the ruthless behaviour of factory-owners of those days and the rush for enrichment as the consequence of the ongoing industrial revolution convinced him that the factory system with free competition was the cause of the spread of greed and inhuman behaviour and of the deterioration of moral principles; and this led him to propose, as has been said earlier, new forms of social organization to abolish the system of profit based on competition.

Also Hegel, who was much influenced by Rousseau, thought that the character and opinions of human beings were largely determined by ways of life or more precisely by social conditions. According to him, by promoting the division of labour, capitalism enormously increases material productive forces and favours economic progress; but this progress is obtained at the cost of serious damage to human nature. So much so that Hegel believed that the type of man formed by capitalistic development 'is the negation of what has so far been a grand, elevated and significant product of the evolution of humanity' (Lunghini, 1991, p. xvi). But let us leave discussion of Hegel to philosophers.

13.3 SMITH AND MILL ON THE SOCIAL FOUNDATION OF CHARACTER

Among economists, the idea that human character is heavily influenced by the environment and social institutions has been upheld excellently by Adam Smith and John Stuart Mill.

For Smith, every society tends to produce some types of characters that are expressions of values particularly appreciated in it. A typical example is the character of warriors exalted by many pre-capitalistic societies because it is very useful to them. In contrast, the development of the market economy reduces the attachment of men and women to their countries which induces them to risk their lives and goods to defend the land where they are born (Smith, 1776, vol. II, pp. 264 and 268–9). Moreover, for Smith, in every society the character of a person is determined to a great extent by the profession he follows. Thus, in *The Wealth of Nations* one reads:

> The difference of natural talents in different men is in reality much less than we are aware of; and the very different genius which appears to distinguish men of different positions, when grown up to maturity, is not upon many occasions so much the cause as the effect of the division of labour. The difference between the most dissimilar characters, between a philosopher and a common street porter, for example, seems to arise not so much from nature as from habit, custom and education. When they came into the world and for the first six or eight years of their existence, they were, perhaps, very much alike. (Smith, 1776, vol. I, p. 13, see also vol. II, p. 267)[6]

In *The Wealth of Nations*, a great deal is said about the characters of the three principal categories in capitalistic society: landholders, capitalists and workers. Landholders who earn rent even if they hire their land out to others do not have to work to earn their income, and they tend to become so lazy that often they are not able to defend their own interests (Smith, 1776, vol. I, p. 230). Ivan Goncharov has given an unmatched poetical expression of this kind of man in his *Oblomov*. Moreover, landholders not having to invest capital in their firms to compete with their rivals tend to become spendthrifts, consuming a considerable part of their income (Smith, 1776, vol. I, pp. 366–9 and vol. II, pp. 284–6).

As to the capitalist entrepreneurs, the struggle to augment and defend their profits makes them greedy and ruthless. Smith repeatedly returned to this topic, often ignored by those who see Smith as the doyen of capitalism. According to him, the character of the capitalist entrepreneur is the most unpleasant that there is. He/she is so pressed by business that he/she is utterly insensible to the needs of others and completely indifferent to the public interest. But the capitalist for Smith is able and intelligent and for this reason often occupies the most important posts in the management of public affairs, to the detriment of society as a whole (Smith, 1776, vol. I, pp. 231–2, 436–8).

Finally, as to the worker, towards whom Smith was sympathetic, the influence that determines his/her character is exercised by the division of labour (the central theme, as has been noted, of the theoretical analysis of Smith). He wrote that the division of labour, which is typical of capitalist society, makes productive activity boring and alienating. Not requiring intellectual and emotional participation it tends to brutalize the worker.

> But their understandings of the greater part of men are necessarily formed by their ordinary employments. The man whose whole life is spent in performing a few simple operations of which the effects are perhaps always the same, or very nearly the same has no occasion to exert his understanding or to exercise his invention in finding out expedients for removing difficulties which never occur. He naturally loses, therefore, the habit of such exertion, and generally becomes as stupid and ignorant as it is possible for a human creature to become. (Smith, 1776, vol. II, pp. 263–4, 267)[7]

In this regard the opinions of Mill, a convinced advocate of cooperation, are to some degree similar, albeit with more variations.

According to Mill, the greatest distinction that a government can possess is the promotion of the virtue and intelligence of people. The principal problem with regard to all political institutions is how to promote these moral and intellectual qualities in the community (Mill, 1861, p. 25). To make it so, political economy and, more generally, the social sciences, must be founded on the knowledge of the rules that determine and regulate human character. Indeed, as Becattini has observed, the central idea that Mill had in mind when he was thinking of writing a treatise on ethnology, a project he later abandoned, was that in order to make social science more rigorous, that is, in order to create a true and proper social *science*, one would require as profound a knowledge as possible concerning the formation of human character, that is one would have to construct a science of character (Becattini, 1989, pp. 135–6).

In the light of these premises what then was the opinion of Mill on cooperatives?

Mill profoundly disagreed with socialists for their aversion to competition. This, according to him, serves to oppose the human tendency to indolence and generates the urge to improve people's faculties and not let them get rusty. However, he shared the idea of socialist writers that the emancipation of the labourer could be realized by means of association. The association of labourers in cooperatives, where they become their own masters, wrote Mill, tends to increase the productivity of labour because of the 'vast stimulus given to productive energies' (Mill, 1871, p. 792) by the fact that the partners in a cooperative have interest in producing more to earn more; but this natural benefit, he adds,

> is as nothing compared with the moral revolution in society that would accompany it [the cooperation]: the healing of the standing fend between capital and labour; the transformation of human life, from a conflict of classes struggling for opposite interests, to a friendly rivalry in the pursuit of a good common to all, the elevation of the dignity of labour; a new sense of security and independence in the labouring class; and the conversion of each human being's daily occupation into a school of the social sympathies and the practical intelligence. (ibid.)

Soon after he confirmed that cooperatives represented 'a course of education in those moral and active qualities by which alone success can either be deserved or attained' (Mill, 1871, p. 793).

Mill cited with enthusiasm the experience of the Pioneers of Rochdale, the celebrated cooperative founded in 1844 and thriving at the time, where there was an environment of prosperity and honesty and which had demonstrated with evidence how 'the moral character' of people is improved by the communal interests and solidarity typical of cooperatives. In one passage he also referred to the distinction, which was later proposed by Marshall, between base or egotistical motivation, which needs to be applied for the lack of a better one, in economic activity and the higher motivation based on 'elevated feelings' typical, we repeat, of cooperatives.[8]

13.4 MARSHALL AND THE SOCIAL FOUNDATION OF CHARACTER[9]

If Mill's ideas about socialism and cooperation are well known, the same cannot be said of Marshall's ideas about these issues, not least because some of the most interesting thoughts of the celebrated English economist on socialism and communism are to be found in unpublished manuscripts brought to our notice recently by Becattini (1989, pp. 44–5).

Above all what interests us here is that Marshall was a convinced supporter of the idea that people's character is forged by the environment in which they live, particularly the environment of work and by the work they perform. Comparing the social thoughts of his time to those of the age of Smith and Ricardo, Marshall writes,

> the range of vision even of the great seers of that age was in some respects narrower than is that of most educated men in the present time; when, partly through the suggestions of biological study, the influence of circumstances in fashioning character is generally recognised as the dominant fact in social science. Economists have accordingly now learnt to take a larger and more hopeful view of the possibilities of human progress. They have learnt to trust that the human will, guided by careful thought, can so modify circumstances as largely to modify character. (Marshall, 1890, p. 48)

And, elsewhere he wrote more succinctly: 'while the earlier economists argued as though man's character and efficiency were to be regarded as a fixed quantity, modern economists keep constantly in mind the fact that it is a product of circumstances under which he has lived' (Marshall, 1890, p. 764).

Becattini also cites the following passage of the *Memorials of Alfred Marshall* from which it emerges that like Mill the great English economist was also thinking that to found a true and proper social science one needed to construct a science of character.

> Social science or the reasoned history of man, for the two things are the same, is working its way towards a fundamental unity; just as is being done by physical science, or, which is the same thing, by the reasoned history of natural phenomena. Physical science is seeking her hidden unity in the forces that govern molecular movement: social science is seeking her unity in the forces of human character. To that all history tends; from that proceeds all prediction, all guidance for the future. (Marshall, 1897, pp. 299–300)

In the beginning of his *Principles of Economics* defining the object of science of economics he wrote logically: 'it is on the one side the study of wealth; and on the other, and more important side, a part of the study of man. For man's character has been moulded by his every-day work, and the material resources which he thereby procures, more than by any other influence unless it be that of his religious ideals and the two great forming agencies of the world's history have been the religious and the economic' (Marshall, 1890, p. 1).

In one of his writings of 1873 Marshall had observed that 'we scarcely realise how subtle, all pervading and powerful may be the effect of the work of man's body in dwarfing the growth of the man' (Marshall, 1873, pp. 105–6). 'Man ought to work in order to live: his life, physical, moral and mental, should be strengthened and made full by his work' (Marshall, 1873, p. 108).

As to the relative influence of two principal factors of the history of the world, immediately after the passage of the *Principles* that has been cited, Marshall adds:

> Religious motives are more intense than economic, but their direct action seldom extends over so large a part of life. For the business by which a person earns his livelihood generally fills his thoughts during by far the greater part of those hours in which his mind is at its best; during them his character is being formed by the way in which he uses his faculties in his work by the thoughts and the feelings which it suggests, and by his relations to his associates in work, his employers or his employees.
>
> And very often the influence exerted on a person's character by the amount of his income is hardly less, if it is less, than that exerted by the way in which it is earned. ... It is true that in religion, in the family affections and in friendship, even the poor may find scope for many of those faculties which are the source of the highest happiness. But the conditions which surround extreme poverty, especially in densely crowded places, tend to deaden the higher faculties. (Marshall, 1890, p. 2)[10]

13.5 MORE ON MARSHALL AND THE FORMATION OF CHARACTER

Marshall confessed in the first edition of *Principles* that his work was influenced above all by the writings of Herbert Spencer, imbued with Darwinism, and by the *Philosophy of History* of Hegel; and these influences explain why he believed that political economy should concern itself with the formation of character as its unifying theme.[11]

For Marshall, as has been said, there are 'base' motivations for human activity, the desire to earn money or the urge to satisfy instincts, and 'high' motivations which he identified mostly with ethics. The task of the social scientists is 'to stimulate the people of their own time to a nobler life' (Marshall, 1890, p. 6) and to suggest all the possible institutional reforms that can favour the prevalence of ethical motives over those of instincts, also giving rise to the fact that by its nature the passage from the baser to the higher motivation is gradual.[12] Capitalism, for Marshall, gives rise to the baser motivations; communism, on the other hand, is a society in which there are public duties but no private rights, in which everybody works according to his/her capability and earns according to his/her needs: in other words, it is the perfect society that gives rise only to the higher motivations.

Competition and private property, characteristics of capitalism, work for Marshall both for good and for bad. He writes: 'The term "competition" has gathered about it evil savour, and has come to imply a certain selfishness and indifference to the well-being of others' (ibid.); but the struggle between people has always existed and has not become more intense with capitalism. As competition is a must to combat laziness and as it favours the growth of the wealth it improves the fortunes of the humanity. Certainly, 'in a world in which all men were perfectly virtuous, competition would be out of place' because 'men would think only of their duties' (Marshall, 1890, p. 9); but history shows that 'ordinary men are seldom capable of pure ideal altruism for any considerable time together' and 'in the responsible conduct of affairs, it is worse than folly to ignore the imperfections which still cling to human nature' (ibid.).

13.6 MARSHALL AND THE COOPERATIVE MOVEMENT

What has been said explains the truth of the observation of those who say that Marshall, a founding father of economic science, maintains that economics, instead of putting economics and politics together, as is still believed by many

authors, should combine economics and ethics, an extremely demanding task (Riesman, 1990).

This way of looking at things leads Marshall to consider favourably the cooperative movement about which he writes that it 'undoubtedly does rest in great measure on ethical motives' and 'has a special charm for those in whose tempers the social elements are stronger' (Marshall, 1890, p. 306). He writes that the cooperative movement 'combines high aspirations with calm and strenuous action' and 'sets itself to develop the spontaneous energies of the individual while training him to collective action by the aid of collective resources, and for the attainment of collective ends. It has points of affinity with many other movements', but they do not have 'the same direct aim to improve the quality of man itself' (Marshall,1889, p. 227); and, immediately afterwards, while enumerating the central ideas and objectives of the movement, at the top of the list he puts 'the production of fine human beings' (Marshall, 1889, p. 228).

Moreover, according to Marshall, another fundamental advantage of the cooperative is that it efficiently utilizes the human capacity to work which is wasted under capitalism. The cooperative makes the labourers feel that they are the masters of the factory and that the factory is their responsibility and it creates the incentive to work and produce in a better manner. In it the labourers do not produce for others but for themselves, and this releases an enormous capacity for scrupulous and higher-quality work which is suppressed in capitalism. 'In the world's history there has been one waste product, so much more important than all others that it has a right to be called THE waste product. It is the higher abilities of many of the working classes' (Marshall, 1889, p. 229).

But in practice the cooperative system encounters many problems. To be realized according to its ideal, human nature would have to be improved. Marshall concludes his evaluation saying that 'the world is only just beginning to be ready for the higher work of the cooperative movement' (Marshall, 1890, p. 307); and it is only to be hoped (even if with well-founded reason) that in future it will have more fortune than it had in the past (ibid.).

13.7 MARSHALL, THE COOPERATIVE MOVEMENT AND COMMUNISM

This evaluation of the cooperative movement which is briefly discussed by Marshall may be better understood if his idea of communism, as can be found in his later unpublished writings brought to us by Becattini, is kept in mind. In these writings communism is presented as a myth, a perfect but unrealizable society, and it 'seems more as an outline, extremely high and invisible to common man, of the process of civilisation continuously at work in the world, than a state to be achieved in reality' (Becattini, 1989, p. 152). Communism could be realized only if people were perfectly virtuous; but it is doubtful that they will move rapidly in that direction, because 'unfortunately human nature improves slowly' (Marshall, 1890, p. 720).[13] In addition, the progressive increase in wealth brought to the society by capitalism, instead of improving human character can be damaging to it, either because competition nourishes the continuation of egotism or because the psychological mechanism of imitation induces the common people to follow the tenor of life of wealthy people and to copy their affectations and behaviour, even when the rich are coarse and egotistical. Moreover, and this is the central point of the argument, there is no reason to believe, in the light of what we know today about his later manuscripts, that Marshall would have ever modified his opinion, which could be read in the *Principles*, according to which there is a 'strong *prima facie* cause for fearing that the collective ownership of the means of production would deaden the energies of mankind and arrest economic progress', because it would reduce the incentives to struggle to be wealthy (Marshall, 1890, p. 713).

In 1907 Marshall wrote that he was convinced that, as soon as collective control became so widespread as to considerably reduce the area left to the free firm, the pressure of bureaucracy would damage not just the basis of material wealth, but also many of the higher qualities of human nature, whose reinforcement should be the principal aim of social progress (Marshall, 1907, p. 334, see also p. 342).

In the *Principles* one finds the opinion, noted above, that communism would smother the energies of mankind;[14] and one finds the opinion according to which at that time in England the vitality of the population was impaired by the old poor law, by the corn laws and by the abuses of factory legislation (Marshall, 1890, p. 715). But in the *Principles* the conviction is also expressed that 'gradually we may attain to an order of social life in which the common good overrules individual caprice, even more than it did in the early ages before the sway of individualism' (Marshall, 1890, p. 752).

These opinions on communism help us to understand that according to Marshall the great benefit of the cooperative remains the fact that it can contribute enormously to the improvement of human nature, without damaging 'the roots of material wealth' and, therefore, without arresting economic growth. While a system of self-management, by its nature, introduces a principle of solidarity in economic activity, it supposes that all economic agents continue to follow their private interests and does not suppose, therefore, that 'a new man' is to be made.[15]

13.8 KEYNES AND SOCIALISM[16]

But now let us turn to some interesting ideas of Keynes, which will help us to see another aspect of the problem. Keynes, as is well known, was a convinced critic of *laissez-faire*, even if he was commonly believed to be a defender of capitalism, since he did not feel able to support any form of socialism.[17]

For Keynes, the political philosophy of capitalism is that of David Hume, according to which 'it is not contrary to reason to prefer the destruction of the whole world to the scratching of my finger' (Keynes, 1926, p. 274), whereas socialism comes from Rousseau, Paley and Bentham who were the first to introduce the ideas of equality and altruism into political philosophy (ibid.).[18] According to Keynes, Bentham introduced altruism into political philosophy 'by pure reason' (Keynes, 1926, p. 273), because he argued that the only rational human behaviour is that which aims at 'the greatest happiness for the greatest number' (Keynes, 1926, pp. 273–4); and, therefore, according to him the opposition between capitalism and socialism is due to the fact that the former is based on egotism and the latter on the objective of 'the greatest good of the greatest number' (Keynes, 1926, p. 275).[19] Indeed, in 'The End of Laissez-faire', he *defined* capitalism as a society based on egotism writing that 'the essential characteristic of capitalism' is 'the dependence upon an intense appeal to the money making and money-loving instincts of individuals as the main motive force of economic machine' (Keynes, 1926, p. 293).

Putting things in this fashion, Keynes had to have great sympathy for socialism. He wrote: 'I criticise doctrinaire State Socialism, not because it seeks to engage men's altruistic impulses in the service of society, or because it departs from laissez faire, or because it takes away from man's natural liberty to make a million, or because it has courage for bold experiments. All these things I applaud' (Keynes, 1926, p. 290). But, while applauding the ideals of socialism and adding that capitalism 'in itself is in many ways extremely objectionable' (Keynes, 1926, p. 294), Keynes considered socialism impracticable and said that in any case he preferred capitalism. 'For my part, I think that capitalism, wisely managed, can probably be made more efficient for attaining economic ends than any alternative system yet in sight' (ibid.).

In this regard, Keynes's position is similar to that of the later Marshall, which we have already discussed.

In 'The End of Laissez-faire' the sympathy for communism along with the conviction that it cannot be realized, led him to say that:

a. wherever possible the moderation and attenuation of egotistical motives is appropriate;[20]
b. capitalism should be guided by the state so as to achieve goals in the public interest, and which would not be achieved by private individuals.

On the moderation of private interests Keynes had some interesting thoughts, which were later scrutinized and popularized by Berle and Means, and that bring us to the question of the public firm. He wrote:

> One of the most interesting and unnoticed developments of recent decades has been the tendency of big enterprise to socialise itself. A point arrives in the growth of a big institution – particularly a big bank or a big insurance company – at which the owners of the capital, that is shareholders, are almost entirely dissociated from the management, with the result that the direct personal interest of the latter in the making of great profit becomes quite secondary. When this stage is reached, the general stability and reputation of the institution are more considered by the management than the maximum of profit for the shareholders. The shareholders must be satisfied by conventionally adequate dividends; but once this is secured, the direct interest of the management oft consists in avoiding criticism from the public and from the customers of the concern. (Keynes, 1926, p. 289)

The point to appreciate in this passage is the observation (already made by Marx, and by Sidney and Beatrice Webb[21]) according to which big firms tend to socialize themselves, because in them property is getting more and more distanced from control to the extent that whether the property is public or private becomes irrelevant (Keynes, 1926, p. 290, see also, 1927, p. 695).

The observation that big firms tend to socialize themselves led him to say that 'progress lies in the growth and the recognition of semiautonomous bodies within the State-bodies whose criterion of action within their own field is solely the public good as they understand it, and from whose deliberations motives of private advantage are excluded' (Keynes, 1926, p. 288). In other words, for Keynes, 'the battle of socialism against unlimited private profit is being won in detail hour by hour' (Keynes, 1926, p. 290), because there is a natural line of evolution which leads to the socialization of the firm. He approved of this tendency and wrote without mincing words that 'we must take full advantage of the natural tendencies of the day' (ibid.).

Let us recall that for Keynes, limiting the profit motive does not present much of a problem, above all because 'different persons, according to their choice of profession, find the money-motive playing a large or a small part in their daily lives, and historians can tell us about other phases of social organisation in which this motive has played a much smaller part than it does now' (Keynes, 1926, p. 293).

The main reason why minimizing the role of profit would not create many problems is 'that mankind is solving its economic problems' (Keynes, 1930, p. 325), because according to Keynes within a century the standard of living in developed countries would increase by four to eight times, so as to eliminate the scarcity of goods.

In 'Possibilities for our Grandchildren', Keynes argued at length that while in the past the economic problem, the struggle for subsistence, had been the most difficult problem facing humanity, in future it would be reasonable to expect a gradual loosening of the pressure to be rich. In fact, according to Keynes, gradually humanity will become richer, and its problem, for the first time, will be how to use its free time which it is finally going to enjoy, how to live in a pleasant and prudent way. When humanity becomes sufficiently rich so as to resolve its more urgent problems 'the love of money as a possession – as distinguished from the love of money as a means to the enjoyments and realities of life – will be recognised for what it is, a somewhat disgusting morbidity, one of those semi-criminal, semi-pathological propensities which one hands over with a shudder to the specialists in mental disease' (Keynes, 1930, p. 329). Then people would have time to dedicate themselves to the nobler activities such as study and arts.[22]

13.9 KEYNES AND SOCIALISM: COMMENT

On the basis of what has been said, in our opinion the arguments so far presented provide arguments in favour of the cooperative firm, above all bearing in mind the consideration that economic organization has a big influence on the character of human beings.

First of all, the contrast put forward by Keynes between the political philosophy of capitalism, which is based on egotism, and the political philosophy of socialism, which is based on altruism, is useful to show the advantages of the cooperative firm. We know that this is not based on altruism, but favours the formation of a feeling of solidarity and would, therefore, make producers more sensible to other people's need (and Keynes's ideas help us to analyse this aspect). In other words, Keynes's idea that with the accumulation of capital people would be ever less interested in becoming rich and would dedicate themselves more to art and culture, provides an argument to say that the principal characteristic of the cooperative firm, that is, those who work more earn more both for themselves and for *others*, is a merit and not a defect of the firm. We know that in the cooperative firm the profit motive is less important, but, according to Keynes, in a rich society this is an advantage rather than a fault, because when all have what is necessary to live and more, it will become clearer to all that 'those walk most truly in the paths of virtue and sane wisdom who take least thought for the morrow' (Keynes, 1930, p. 331).

In a society where the profit motive is mitigated and people have more free time to enjoy, everyone, we repeat, would dedicate more time to the nobler activities in life – the search for truth and the enjoyment of things beautiful, whether a panorama or a work of art. In a society free from economic necessities 'we shall honour those who can teach us how to pluck the hour and the day virtuously and well, the delightful people who are capable of taking direct enjoyment in things, the lilies of the field who toil not, neither do they spin' (ibid.).

But if running after money makes people greedy and petty minded and dedicating their time to art and culture makes them nobler and altruistic, then this is a strong argument to say that a society of cooperative firms would improve human nature by mitigating the profit motive.

In other words, Keynes's argument, according to which gradually the more rich the society is the less important would be the profit motive (and this will generate a tendency to dedicate more time to art and science) may be used to say that in a system of cooperative firms, which by its nature reduces the profit motive, there would be a tendency to dedicate oneself more to art and science and this would contribute to the betterment of human nature.

But Keynes's ideas about socialism also provide other arguments in favour of cooperative firms. It has already been noted that for Keynes there is a spontaneous tendency in the firm to socialize because of the separation of property from control, to the extent that it may become irrelevant whether property is public or private. We also noted Keynes's favourable opinion about the progressive socialization of economic life. Keynes's sympathy for the *socialization* of economic life meant that he was not worried about the passage from private to public ownership of the firm, but did not mean that he was happy about widening the role of public administration. In the *General Theory* he wrote that 'central controls necessary to ensure full employment will, of course, involve a larger extension of the traditional functions of government' (Keynes, 1936, p. 379). But, as is well known, according to him this depended on the fact that 'a somewhat comprehensive socialization of investment will prove the only means of securing an approximation to full employment' (Keynes, 1936, p. 378); and in the *General Theory* (and the writings that followed it) he did not pause to clarify whether 'socialisation of investment' would come through an expansion of expenditure of the public administration or through a control of the investments of public enterprises.

In this regard, however, Keynes expresses himself fully in favour of the second alternative in other writings.

Thus, in 1925, Keynes wrote:

> I believe that in the future government will have to take on many duties which it has avoided in the past. For these purposes Ministers and Parliaments will be unserviceable. Our task must be to decentralise and to devolve wherever we can, and in particular to establish semi-independent corporations and organs of administration to which duties of government, new and old, will be entrusted – without, however, impairing the democratic principle or the ultimate sovereignty of Parliament. These questions will become as important and difficult in the future as the franchise and the relations of the two Houses have been in the past. (Keynes, 1925, pp. 301–2)

In 'The End of Laissez-faire' Keynes observed, among other things, that 'the ineptitude of public administrators strongly prejudiced the practical man in favour of laissez faire' (Keynes, 1926, p. 275)[23] and wrote that 'we must probably prefer semiautonomous corporations to organs of the Central Government for which Ministers of State are directly responsible' (Keynes, 1926, p. 290).

The problem of public firms is discussed at length in an article in the *Manchester Guardian* of 1927, which is centred round the idea that the demarcation line between the private and the public sectors 'is continually changing in accordance with the practical needs of the day' and in tracing this line of demarcation 'no great question of principle is involved at all' (Keynes, 1927, p. 695). It should be borne in mind that in this article Keynes begins by noting that in those days in England two-thirds of the overall capital of big firms was in the hands of the public sector; and this explains clearly why he wrote that at that time the problem was not that of nationalizing other firms, but 'to discover how to run the best enterprises which are already public concerns efficiently and to the public advantage' (Keynes, 1927, p. 696). And discussing how the public firms should be managed, Keynes observed that Cabinet ministers should have as little as possible to do with these firms, whose gigantic operations should be kept separate from the state budget (ibid.).[24]

Therefore, if it is true that Keynes approved of the socialization of economic life and if it is also true that for him the socialization of economic life would not be realized with the help of a progressive expansion of the tasks of public administration, but rather through the socialization of firms, then a society of cooperative firms seems to correspond to his ideal. Cooperative firms are maximally socialized firms, where there is a separation of property from control and where it is irrelevant whether property is public or private. Also, in a society of cooperative firms, the social control of investment is made easier by public ownership of means of production.

13.10 CONCLUSION

The idea that humankind's 'nature' is forged and modified by its professional activity is, therefore, by no means new but these days it is often forgotten.[25] Economists, in particular, have argued that in a market with free competition and without state intervention, long-term equilibria would be identical in a system of capitalistic firms and in a system of self-managed firms with public ownership of the means of production. This amounts to saying that socialism in a market economy would change nothing.

But the influence of economic activities on ideas, emotions and the whole psychology of the individuals is enormous, and cannot be exaggerated.[26] Under capitalism, Gramsci has written,

> society loosens all its collective ties and is reduced to its primordial element – the individual-citizen. It is the beginning of the dissolution of the society corroded by the modern acid of competition: the teeth of dragon are sowed among men and frantic passions grow out of proportion, quenchless hatred, irreducible antagonism. Every citizen is a gladiator seeing others only as enemies to knock down or to be subjugated to his interests. All the noble ties of love and solidarity are dissolved: from the corporations of artisans and the castes to religion and family. (Gramsci, 1919–20, p. 4)

But it is from capitalistic society that the socialist ideal originates 'as a protest of the historical being against every obstinacy and swamping of the social being' (ibid.). And

> the workers' movement is the spiritual revolt of humanity against the new and ruthless feudatories of the capital; it is the reaction of the society that wants to reorganize itself in harmonic organism solid and upright by love and compassion. 'Citizen' is replaced by 'comrade'; social atomism by social organization. New units of new order originate spontaneously, they adhere and found vast stratifications in sympathy. The injurious power of 'liberty' is brought under limit and control, the dominion of the capitalist is checked in the factory. The worker acquires a bit of autonomy, a bit of real liberty. He is not against all anymore, he is the partner of the community that constitutes part of the larger and powerful community. (Gramsci, 1919–20, p. 5)

Self-management is a system that repudiates social atomism and unites workers in productive organizations. The units of the new order, the cooperative firms, see to it that each worker is no more against all, but a partner in the community where the dominion of the capitalists has been suppressed and labour has won full autonomy from the control of capital. In the self-managed firm, producers cooperate because the greater revenue that a firm produces is divided among all the workers of the firm; and this undoubtedly and in a relevant manner favours the growth and dissemination of a 'solidaristic' mentality.

In an important book Novak has written that there are two revolutionary thoughts in the main traditions: utopian and realistic. The utopian revolutionaries imagine that the source of evil is in determined social structure and determined systems, and their removal would produce the removal of evil and the eminence of virtues. The realists believe instead that the source of evil is in the single individual and in the intrinsic limit of every form of social

organization. The realists believe that no structure and no social system, however cleverly planned, will banish the evil from the camp of human liberty (Novak, 1982, Chapter IV).[27]

But it is curious that Novak and many others like him do not see that between these two radicalisms there is an intermediate position, which we call the position of common sense, which affirms that social structures have a certain influence over human behaviour and may, therefore, promote, within certain limits, human vices and virtues, without going so far as to suggest that even a well-designed social structure can remove the source of evil.

As has been rightly observed, proposing to create new institutions based on the origin of new values has gone out of fashion, because it is too easy to disregard many problems which arise if one affirms values more congenial to socialist ethics but which are too difficult to realize. However, by its nature, socialism relies on the interplay of institutions and values and every good socialist, even if he/she believes in the immutability of human nature, thinks that it is certainly possible to uplift its good aspects to create a better world than what we have now (Abell, 1969, p. 79). They who accept this intermediate position, which obviously is the only acceptable one for us, do not argue about whether people by their nature are egotistical or altruistic, but observe that while capitalism tends to make people *more egotistical* and competitive in economic matters, market socialism tends to make them more cooperative and *solidaristic* in their job relations.[28] And, then, if it is true, as the classics of economic thoughts have argued, that labour activities have a big influence over human 'nature', there are solid arguments to say that self-management and solidarity are two sides of the same coin.

Wright Mills has suggested that the left should socialize the means of production in order to favour the humanization of people. It was in the factory rather than in the electoral district that he believed the new person must be born; and this is the reason for which the left believes that worker control, in greater or lesser measure, should be the first demand of unions in negotiations (Mills, 1984, p. 258). And Fromm concluding one of his very well-known books has observed that, in order to achieve a society based on being, all of its members should actively participate in economic life as free citizens, which means that a good society is possible only with full democratic industrial and political participation (Fromm, 1976).

Before concluding this chapter one last consideration seems appropriate. The assumption that the character, values and preferences of people are given, as orthodox theory asserts, has important normative implications. As has rightly been observed, the assumption that the individual's psychology is given, about which economic science does not have to worry, lends support to the opinions of those who say that individuals are better judges of their interests and nobody else can better judge what is good for them, and this helps to support the idea of *laissez-faire* (West and McKee, 1983 and Etzioni, 1991). Considering endogenous preferences, the assumption that they are changeable and malleable introduces in a systematic way the possibility that the group processes, social values and power relations contribute in significant manner to form the individual preferences (Etzioni, 1991). In the light of the possibility that individual choices are manipulated, this opinion suggests, on the one hand, that democratic control of institutions may be worthwhile in order to avoid precisely that. On the other, more democratic structures can enhance the degree of realization of those who live in them. Rawls, noting the overly narrow character of much political economy, has written that efficiency considerations are but one of the bases for decision-making, and are often among the less important of these. He adds that often we accept, without thinking, the moral and political concepts implicit in the *status quo*, or we allow decisions to be the random result of conflict between economic and social forces. But, political economy must interest itself in these issues (Rawls, 1971, p. 222).

NOTES

1. Also Gustafsson has observed recently that one of the fundamental traits of capitalism is that it favours the motivations and actions of a competitive type more than those of a cooperative type (Gustafsson, 1993, p. xvi).
2. This and the following section reproduce with modification work already published in Jossa (1990b and 1991d).
3. On the conception of man in Marx and particularly in the *Theses on Feuerbach*, see Mondolfo (1909 and 1962, pp. 312 ff.); Fromm (1961); Markus (1966); and the volume of collected writings of Schaff and Sève (1975).
4. However, it should be borne in mind that Marx also wrote: 'The materialist doctrine concerning the changing of circumstances and upbringing forgets that circumstances are changed by men and that it is essential to educate the educator. This doctrine must, therefore, divide society into two parts, one of which is superior to society' (Marx, 1845, p. 422).
5. As has been noted many times, in this aspect Keynes's political philosophy resembles that of Plato's (for example, Fitzgibbons, 1988, pp. 174–5).
6. See also, Smith (1776, vol. II, p. 264).
7. In a recent diligent study on Smith it has been observed, contrary to what we argue, that the idea according to which the desire to get wealthy and the exercise of egotism in economic activities drive away the benevolence of the soul is not found in Smith but in his disciple Mill (Raffaelli, 1994, pp. 220–21).
8. For a criticism of this distinction, in a utilitarian vision of economic activity, see Hahn (1993b, p. 263, note).
9. This and the following two sections are reproduced with modifications work already published in Jossa (1991b and 1991d).

10. Marshall has rightly remarked that, 'the occupations which we are wont to call occupations of gentlemen elevate the character and educate the faculties' (Marshall, 1873, p. 104).
11. While giving an account of how he dedicated himself to political economy, Marshall recalled how he studied psychology first which makes 'fascinating inquiries into the possibilities of the higher and more rapid development of human faculties' (Keynes, 1924, p. 171).
12. In *Principles* it is said that 'no doubt men, even now, are capable of much more unselfish service than they generally render: and the supreme aim of the economist is to discover how this latent social asset can be developed most quickly, and turned to account most wisely' (Marshall, 1890, p. 9).
13. On the other hand, Marshall has also written that 'human nature can be modified; new ideas, new opportunities and new methods of action may, as history shows, alter it very much even in a few generations' (Marshall, 1890, p. 752).
14. In *Industry and Trade* of 1919, in a similar vein, Marshall wrote that 'no socialist scheme, yet advanced, seems to make adequate provision for the maintenance of high enterprise, and individual strength of character' (Marshall, 1923, p. viii, cited by Pigou, 1953).
15. For Marshall the lack of success of the cooperative movement is explained by the difficulty of managing the firm by workers (Marshall, 1890, pp. 305–6, as well as, for example, Robertson and Dennison, 1924, pp. 121–2).
16. This and the following sections are an enlarged version of Jossa (1989b, pp. 166–8, 1991a and 1991c).
17. According to O'Donnell, Keynes was a supporter of non-Marxist socialism which he called 'the true socialism of the future', 'the practical socialism' or 'the liberal socialism' (O'Donnell, 1989, pp. 322–4; 1991 and 1992, pp. 781–5). But, like others, O'Donnell also has come round to say that what Keynes defended was capitalism with strong state control over the economy.
18. As is well known, according to Hayek socialism comes from Cartesian *constructive rationalism*, from Rousseau and from Bentham's *constructivism* (Hayek, 1988a, pp. 48–52).
19. The idea that socialism originated with Bentham is also found in the following passage where Keynes writes that 'nineteenth-century State Socialism sprang from Bentham, free competition etc., and is in some respects a muddled version of just the same philosophy as underlies nineteenth-century individualism' (Keynes, 1926, p. 291). The common philosophical origin of *laissez-faire* and socialism explains why Keynes criticizes both these systems with the same arguments.
20. In contrast, in the *General Theory* Keynes writes that 'the reaction against the appeal to self-interest may have gone too far' (Keynes, 1936, p. 337). Regarding this, Durkheim says that ' Egoism is too essential to human nature to be uprooted from it – as desirable as it might be' (Durkheim, 1928, p. 38).
21. Webb and Webb (1923, pp. 72–3).
22. For a recent short account and discussion of the social philosophical writings of the 1920s by Keynes, see La Malfa (1994). A passionate criticism of the ideas of Keynes about free time can be found, on the other hand, in Einaudi (1932).
23. On Keynes's aversion towards public administrators and politicians, see the citations in Skidelski (1983, pp. 260 and 345).
24. To properly understand Keynes's thoughts in this regard, it needs to be remembered, as Skidelski has expressed well, that Keynes understood the term 'the State' to mean something very different from what is understood now, and he did not outline the

economic limits of the state in the way in which it is done today. He made a crucial distinction between government, public administration and politicians on the one hand and the state on the other. What characterizes this kind of administration which Keynes called the state administration is not its being a public institution but rather that it acts in the public good. That is, by 'the State' Keynes meant a group of institutions which follow public aims (Skidelski, 1989).

25. Only neo-classical economists and those of the Austrian school who accept a rigid methodological individualism ignore any influence of the environment on character. As has been observed many times, in methodological individualism the individual is the point of departure of analysis and his/her nature is assumed to be given, with given needs, interests and aims; in other words, according to methodological individualism there is no evolution of individuals (see, for example, Lukes, 1973, p. 73). A different, even if unacceptable, explanation of why economists consider the tastes, habits and psychology of individuals as given is to be found in the works of authors such as Lachmann and Shackle who, influenced by the Austrian school, suggest that individuals make non-derived, spontaneous choices which by their nature are not caused (Lachmann, 1969, p. 63; Shackle, 1989, p. 51).
26. After having seen that the way in which people work as well as satisfying their current desires also influence the desires that they will have later and the type of person that they will become, Rawls in his well-known book adds that 'these matters are, of course, perfectly obvious ... and these were stressed by economists as different as Marshall and Marx' (Rawls, 1971, p. 259).
27. For a very well-argued comparison between the two main traditions of political philosophy, see also Sowell (1987).
28. In his *Elogio della mitezza* Bobbio writes: 'The meek, however, is the one who "let others be as they are", even if the other is arrogant, insolent and overbearing. He does not get into relationships with others with the purpose of competing, to get into conflict and in the end to win. He is completely outside the spirit of match, of competition, of rivalry, and, therefore, also of victory' (Bobbio, 1994b, p. 25).

14. Conclusion

> Socialism is based on the opinion that it is possible to decentralise power in a genuinely democratic way, up to the point where the greater part of government is self-government. (Miliband)

Self-management is a form of direct democracy whose enormous political significance and raising of consciousness can be evaluated only by those who have critically reflected on the limits of political democracy in the absence of economic democracy.[1] From a strictly economic point of view, self-management should lead, by its very nature, to: the almost complete disappearance of lay-offs, lower interest rates and, more generally, a socially-determined and therefore more equitable distribution of income, the elimination of inflation in labour costs, the creation of pleasanter jobs, less severe economic crises, and, according to some, the ending of exploitation and alienation.

Self-management becomes possible at a certain level of productive development, a level which today's capitalism has certainly arrived at. The first and clearest implication of this is that the role of capitalist-boss has become superfluous in advanced economies.

As has been already noted, Marx wrote that cooperative firms provide the proof that the capitalist, in his/her role as manager of production, has become superfluous; and shortly afterwards he added:

> The wages of management, both commercial and industrial, appear as completely separate from profit of enterprise both in the workers' cooperative factories and in capitalistic joint-stock companies. The separation of managerial wages from profit of enterprise, which in other cases appears accidental, is here a constant factor. In the case of the cooperative factory, the antithetical character of the supervisory work disappears, since the manager is paid by the workers instead of representing capital in opposition to them. (Marx, 1894, p. 512)

The same idea was reiterated by Gramsci for whom, 'capitalism is by no means necessary and the spirit of initiative, the vital economic impulse, is not destroyed by the fact that the administrators, the technical staff of a firm, are salaried and not interested in the last penny of profit' (quoted in Lunghini, 1994, p. xxiii).

The deeper significance of self-management, however, lies in the fact that it leads to the end of class struggle and capitalist exploitation.[2] It is for this reason that, as soon as self-management is introduced *in the entire system* (or even just in the industrial sector, the most important sector in modern economies, and in agriculture), capitalism may be said to be abolished.

Marx has also written:

> But there was in store a still greater victory of the political economy of labour over the political economy of property. We speak of the cooperative movement, especially the cooperative factories raised by the unassisted efforts of a few bold 'hands'. The value of these great social experiments cannot be overrated. By deed, instead by argument, they have shown that production on a large scale, and in accord with the behest of modern science, may be carried on without the existence of a class of masters employing a class of hands; that to bear fruit, the means of labour need not to be monopolised as a mean of dominion over, and of extortion against the labouring man himself; and that, like slave labour, like serf labour, hired labour is but a transitory and inferior form, destined to disappear before associated labour playing its toil with a willing hand, a ready mind, and a joyous heart. (Marx, 1864, pp. 16–17)

As well as Marx, positive evaluations of cooperatives have come from economists with a completely different and much more orthodox political orientation. For example, John Stuart Mill and Alfred Marshall, as was seen in Chapter 13.[3]

In the light of such authoritative judgements, as well as what has been written here, it seems strange that self-management, against which no-one has yet raised decisive objections, has difficulty in finding substantial support by economists and other scholars. There are objections to self-management, as we have seen in this book.[4] But, none of these, even those more widely discussed, appears entirely convincing and without solution.[5]

But why has the cooperative movement not achieved success at a political level? It is well known that, before Marx wrote *Capital*, Pierre Proudhon had outlined a plan of a society based on productive cooperatives and his opinions had great success with left-wing political leaders of the day. In particular, in Germany the social democratic party included in its programme the creation of a system of cooperatives, which were considered socialist firms, alternatives to capitalistic firms. Subsequently, in the last ten years of the last century, the lack of success of cooperative experiments, the criticisms of Marx and Marxists of Proudhon and his anarchistic political programme, and, perhaps, also the criticisms of liberals such as Pantaleoni (who denied any substantive difference between cooperative and capitalistic firms, as we have seen) undermined the cooperative movement. From then on the predominant opinion has been that the interests of workers are better defended by trade unions than by the management of firms by workers.

The greater success of trade union organization with respect to cooperatives depends on at least two factors. First, to organize a union is simpler, because it does not require great expense, whereas founding a cooperative requires the availability of capital necessary for production and cooperatives, as we have seen, may run into difficulties in raising the necessary finance. The second reason for the political decline of the cooperative movement is the opposition of trade unions. This opposition was not only due to the fact that trade unions and cooperatives are two alternative means of defending the interests of workers but also, more importantly, to the fact that, if the cooperative movement was successful, trade unions would lose their *raison d'être*. What use is the defence of workers by unions in a society without bosses, where workers are free to organize as they wish? (Elster and Moene, 1989b, pp. 33–5 and Moene and Wallerstein, 1993, pp. 148–9).[6]

But why does self-management not become popular in the real world?

An often expressed opinion in this regard (Nozick, 1974, Chapter 8 and Williamson, 1985, pp. 265–8) is that, if self-management does not assert itself in the competition with the capitalistic firm, this proves that capitalistic firms are either more efficient or more appreciated by the workers themselves. Obviously, this claim appeals to theories of society like social Darwinism, according to which only the fittest institutions are successful and survive. But this is not an explanation[7] of why capitalistic firms predominate since the characteristics which favour firms' success and survival in the capitalist world may be different from the characteristics which would favour success in societies of a different type. In capitalist societies there are institutions with well-defined characteristics and an environment which has been produced in the course of centuries, and these may support a certain type of firms; but in an alternative society, institutions and environment may be such that labour-managed firms would predominate (Putterman, 1982, 1984 and Hodgson, 1993, pp. 91–3; see also McCain, 1992, pp. 215–16). This argument has already been dealt with in Chapter 12, Section 5, where the relationship between property rights, asset specificity and efficiency has been discussed. As it was said there, there is a path dependency in the economic development ensuring that systems which have been successful for any kind of reason will generate self-preserving institutions and environments, so that they will have an advantage when competing with other systems (Arthur, 1989 and North, 1990).

If the predominance of capitalistic firms over self-managed ones cannot be justified by the higher efficiency of the former, which theoretical arguments might be proposed in this regard? In the conclusion of Chapter 12 some arguments were presented according to which cooperative firms are more efficient, even though in the course of this work alternative arguments, justifying the opposite, have been reviewed. Hence, at this stage, the problem cannot be solved by the theoretical analyses, or by the few and unreliable empirical studies available.

In this conclusion, therefore, we limit ourselves to a short discussion of what might be the specific reasons why the cooperative movement has not been successful.

In this regard, one opinion offered by Beatrice Potter-Webb is that cooperatives tend easily to 'degenerate', above all if they are successful, because the partners have an incentive to not share with others the gains; and this implies that, rather than taking on new partners, these firms will tend to take on waged labour (Potter, 1890; Webb and Webb, 1921 and 1923; Buber, 1950; Wiles, 1977; Horvat, 1982; Miyazaki, 1984; Ben-Ner, 1984; Katz, 1988; and Leete-Guy, 1991, pp. 66–7). When a cooperative is successful, the average income of partners is greater than the wage that equally qualified workers can earn in capitalistic firms, and this provides an incentive for the stronger partners to expel the weaker ones and to replace them with waged employees. Even if they do not 'fire' partners, this degenerative process may arise through the replacement of partners leaving the firm voluntarily or through the expansion of the firm, as noted above (Ben-Ner, 1984; Leete-Guy, 1991; pp. 66-7, Whyte, 1991, pp. 83–4; and Grunberg, 1991).

This type of consideration led Vanek to speak, from his very first analysis of the problem, of a tendency to self-destruction of self-financing cooperatives (Vanek, 1971a, pp. 172 ff. and 1971b, pp. 186 ff.). To summarize Vanek's argument, consider a cooperative firm operating with constant returns to scale which has, over time, accumulated capital through self-financing and which is currently fully efficient. Precisely because the firm is efficient, it may be argued, it is in the interests of every partner to appropriate everything, expelling the other partners. If the plant and machinery are worth something, a part of the income is attributable to the marginal productivity of the ownership of the firm and, in this case, the fewer partners there are, the greater will be the income attributable per capita (McCain, 1977, p. 356). In time, therefore, the majority making decisions will tend to automate the firm in order to expel some of the partners, thereby leaving only a few to divide up the income. This process, Vanek affirms, would theoretically come to an end only when there was just one worker (with the maximum automation of production) who would appropriate the entire income of the cooperative.

If this process appears too lengthy, there is another quicker way, Vanek added. The partners of the cooperative might decide to sell the firm to others and invest the resultant funds in financial activities of equal value, thereby giving up work. In other words, an efficient firm developed little by little over the years generates the continuous temptation to its owners to turn themselves into *rentiers*, converting physical capital into financial capital, by selling the firm and investing the gains in income-generating activities. Although it is true that the firm would be bought by others who would continue to work, the funding partners could, however, continue to live without working, thus going against the interests of society as a whole.

An argument which combines the two causes of degeneration outlined above is that the cooperative which is founded through the conferring of a share of capital and which allows waged labour will tend to degenerate (Bellas, 1972, pp. 211–12; Ireland and Law, 1982, pp. 24–5; Miyazaki, 1984; and Ben-Ner, 1984).[8]

Another argument, which is linked to the preceding ones, is the observation that all those with entrepreneurial abilities have an incentive to found capitalistic firms where they appropriate all the profits rather than cooperative firms where the surplus is shared among all the partners. Still on the theme of the founding of new firms, one may observe that the creation of a cooperative requires, by definition, the unanimous agreement of those who create it. This agreement is, in contrast to most market transactions, a multilateral agreement. On the other hand, the creation of a capitalistic firm requires only a series of bilateral agreements and is therefore much easier to accomplish.

The conclusion to be drawn from some of these explanations of the lack of success of cooperatives is that a cooperative movement which wants to be successful without giving rise to degenerative tendencies must require that legislation be passed to introduce two fundamental prohibitions: (a) prohibition of waged labour and (b) prohibition of self-financing, two prohibitions which have been amply justified by what has been said.

An important cause of the weakness of the cooperative firm is that the main decisions have to be taken by the collective of all workers who may be too many to take decisions efficiently. As it is known, democracy's toll is a certain degree of inefficiency and slowness in the decisional procedures. Sometimes time is needed to reach a majority; or, above all when the decision must be taken by a large group of individuals, the final choice might be determined by compromises which make the decision taken not the best one available. The dream of many is, therefore, the 'benevolent dictator', a person who takes rapid and efficient decisions for all the individuals involved. But this is just a dream, in fact, since if an individual has dictatorial powers he/she will use them in his/her own interests. For many, however, it is the excess of democracy which creates inefficiency in the labour-managed firm (Webb and Webb, 1921, p. 133; Hodgson, 1982–83, and 1987, pp. 137–8; Benham and Keefer, 1991; and Klein, 1991, pp. 219–20).

There is, however, another difficulty for cooperative firms which arises precisely when the firm is not self-financed. As it was seen in the chapter on the financing of the firm, the one who lends money to a firm will do so all the more willingly when the firm is also financed by its own capital, because the fact that those asking for a loan are also willing to risk their own capital in the same investment provides a guarantee that the activity promises good results and merits to be financed. A cooperative which does not finance itself and which competes with capitalistic firms which use abundant venture capital to finance themselves is bound to succumb in the race to procure funds and will be put out of business by rivals who, having more and better productive apparatus, will be more efficient (for example, Whyte, 1991, p. 84 and Bowles and Gintis, 1994, p. 210).

According to Meade, the principal reason for the lack of success of cooperative firms is to be seen in the fact that, while in the capitalist world the owners of firms can diversify their portfolios as much as they like, thereby reducing risk, in cooperatives, the workers who earn a variable income and who, in order to provide guarantees to outside investors, also invest their own savings in the firm where they work have to bear too much risk, because both their labour and capital incomes are tied up in the success or failure of the individual firm (Meade, 1972, p. 426; Jensen and Meckling, 1979; and Leete-Guy, 1991, p. 68).

These last two causes of weakness in the cooperative firm, which have been noted by many authors, may lead one to suppose that a system of cooperative firms will only be successful if it is not in competition with a system of capitalistic firms. This was, in effect, the belief of Marx, who thought that, 'to save the industrious masses, cooperative labour ought to be developed to national dimensions, and consequently, to be fostered by national means' (Marx, 1864, p. 17), as Louis Blanc, Ferdinand Lassalle and Pierre Proudhon had also asserted before him. Thus one may perhaps explain the decline of the cooperative movement and the lack of implementation in even a single country of a real market socialism based on self-management[9] with the consideration that cooperatives are the cells of socialist society which can prosper and grow only if there is a radical change in the political and economic order and which are condemned to 'degenerate' (and in any event do not generate a sufficient impulse for change towards socialism) in a society which is hostile to them such as a capitalist state (Vanek, 1971b, pp. 171 ff. and Bonin, Jones and Putterman, 1993, pp. 1312–14). As Martin Buber has written, without the self-management of producers, changes in the political and economic order cannot be other than cosmetic and, without a change in the political and economic order, cooperatives will not give rise to a new society and the implementation of socialism remains just an idea (Buber, 1950, Chapter 8).[10]

It seems, therefore, that self-management cannot establish itself if it is not implemented on a 'national scale' or, at least, is not favoured by an external support structure, as Vanek has argued (Vanek, 1977). In other words, it seems that, in a capitalist regime, self-management cannot gradually spread and prevail when there is free competition between capitalistic and cooperative

firms, as history demonstrates.[11] The problem appears, therefore, to be political, a problem of choice between alternative economic systems.

The fact that the principal arguments in favour of self-management are of a political nature justifies, we repeat, the opinion of those who say that the choice between capitalism and self-management need not (or indeed must not) be left to the free play of market forces, but should, preferably, be decided in parliament; and gives foundation, naturally, to the opinion of Marx according to which cooperative work should be developed on a national scale and, consequently, should be aided by the means at the disposal of the nation. In *A Theory of Justice*, as is well known, Rawls has enunciated two fundamental principles of justice, that is: the *first principle*, according to which every person has the right to the maximum fundamental liberty, so long as this is compatible with equal liberty for others; and the *second principle*, according to which economic and social inequality are admissible only if society guarantees equality of opportunity for all and only if inequalities are a result of the maximization of the welfare of the least well off (Rawls, 1971, pp. 60 and 302). Rawls argues that these two principles are not of the same importance, in as much as the first should always prevail over the second and it is not admissible that individuals renounce some fundamental liberties in order to gain economic benefits even if, naturally, 'it is possible, at least theoretically, that by giving up some of these fundamental liberties men are sufficiently compensated by the resulting social and economic gains' (Rawls, 1971, p. 62). This means that, as has already been observed in the comparison between 'twin' firms, the evaluation of the relative merits of capitalism and self-management cannot be limited to strictly economic considerations[12] and that the arguments in favour of market socialism may be considered valid and important even if, for certain aspects, one is led to believe that the self-managed firm is inefficient.[13]

It seems to us that this conclusion is shared quite generally, even by those who do not accept the ideas of Marx or Rawls. Recently, for example, Giorgio Fuà wrote:

> Work may be more interesting if the person who does it feels himself a participant in the management and of the success of the productive operation in which he is employed; if he is able to recognise the product as his own creation; and so on. Today, in rich countries it is probably more urgent to study the ways of recreating interest in work in the sense just mentioned, rather than studying the ways of increasing the quantity of goods produced by a few percentage points or the purchasing power of one's hourly wage. Still, however, we economists continue to dedicate much time to studying productivity and wages, and practically none to studying the satisfaction of workers. (Fuà, 1993, pp. 107–8)

As to how society might move over to self-management, two roads are open. The first is by 'revolutionary' transformation, passing all at once from one system to the other and which would obviously have to be freely decided by a vote in parliament. This road seems to be fairly simple because, if the nationalization is limited to companies quoted on the stock exchange, then parliament would only have to convert all shares into bonds at market prices; and the measure could be implemented instantly, since every shareholder would immediately have bonds to the value of his/her shareholdings. The only 'complication' would consist in the fact that, given that the bonds would become a debt owed by firms (but also, more generally, for respect of the principles of democracy), an assembly of workers in each firm should decide by majority vote whether or not to accept the transformation of the firm to self-management. In this regard, it is correct to speak of 'revolution' because there would be a passage from one economic system to another (if all, or at least a majority of firms became self-managed), but it would be a democratic and peaceful revolution where the expropriation of firms would be paid for at market prices which, if undertaken at stock exchange prices, would be, or would appear to be, fair.

This road to self-management, which we might call alternatively 'revolutionary' or 'democratic', may provoke the well-known objection that, during the period in which the measure was being discussed in parliament until a vote was taken, capital would be moved abroad (Putterman, 1993b, p. 144). Naturally, this problem does exist, but, against it, it might be noted that the flow of funds would mostly concern available monetary capital, because the movement of plant and machinery abroad is not quite so easy to organize. Furthermore, with a payment which is fair, by its very nature, the incentive to take one's capital abroad might be much reduced.

Notwithstanding what has been said, however, a political choice in favour of self-management is not possible today, and is unlikely to be worthwhile in the future; thus, for a long time to come the road to follow is an evolutionary path. The time is not right, for obvious reasons, because in order to take the democratic road to self-management, it would be necessary that the vast majority of experts and intellectuals should be convinced of the benefits and potential for implementation of the project, and that substantial political forces should be mustered in favour of the initiative in order to convince public opinion. For the moment, however, scientific debate of the question, as has been seen, is anything but completed and few economists defend market socialism and self-management wholeheartedly; and, as for political forces, the day is still far off when the proposal considered here might be taken up seriously by one or more political party.

But, even if there were a large shift in public opinion in favour of self-management, there are still reasons why one might prefer the evolutionary

road: fears of the flight of capital, but above all the conviction that a choice of such importance should not be made on the basis of a simple majority. Naturally (if the idea gained consensus), the evolutionary road could, in our opinion, be speeded up with various types of incentive which would be amply justified by the fact that, in the choice between capitalism and self-management, there are many 'public goods' at stake, the first of these being democracy itself.

But, perhaps, here is not the time or the place to enter into these issues in detail.

NOTES

1. As Vanek writes, 'it is precisely the economic nonrepresentation of billions of people that is the source of the greatest inhumanity and injustice in the world' (Vanek, 1987, p. 14).
2. On the *positive* effects of conflict and, potentially, of the class struggle see, among others, Coser (1956), Dahrendorf (1957) and Hirschman (1994).
3. Among great economists John Stuart Mill is the one who, above all others, has treated the problem of cooperation as the problem of going beyond capitalism through the resolution of its contradictions. See, for example, the excellent 'introduction' in Pesciarelli (1981) and Chapter 13 above. But it should be said that, on close inspection, Mill appears to have been more a romantic than a socialist (see Davies, 1985, p. 354).
4. One of the more convinced critics of self-management is Nuti, who argues that there are numerous important objections to this form of economic organization (Nuti, 1988, 1992a and 1992b).
5. It has recently been written that the objections to socialism can be grouped into four categories: (1) incentives, (2) property rights, (3) information, and (4) control (Streissler, 1994, pp. 50 ff.). Of these four objections, the third and most of the fourth disappear, by definition, when one discusses market socialism with autonomous firms. The first was discussed in Chapter 12 and the second along with the remains of the fourth was examined at length in Chapter 11.
6. Archibald has suggested that the role of the union in a society based on self-management might be that of defending minorities against decisions taken by the majority (Archibald, 1992, pp. 115–16).
7. Darwinian opinions in economics are often justified by faith in the virtues of *laissez-faire* rather than careful observation of reality (Mueller, 1992, p. 301).
8. Empirical studies on the ability of cooperatives to survive are, in general, moderately optimistic (Jones, 1975 and 1979; Trussel, 1985; and Ben-Ner, 1988). But in this regard, an obvious, but important, observation to be made is that 'the co-operative complex in the small Basque city of Mondragon in Spain is the most impressive refutation of the widely held belief that worker co-operatives have little capacity for economic growth and long-term survival' (Whyte, 1991, p. 83).
9. With the possible exception of Yugoslavia in the period between the reform of 1965 and the early 1970s.
10. With reference to the Yugoslavian experience, Kornai has observed that democratic self-government cannot exist freely inside the firm if the Communist Party holds a monopoly of political power in the external world (Kornai, 1992, p. 464).

11. Among those who have expressed such an opinion one finds Bellasi, La Rosa and Pellicciari (1972), Lasserre (1975, pp. 6–7), Horvat (1982, pp. 455–6), Putterman (1982, pp. 157–8) and Fleurbaey (1993, p. 267). For contrasting opinions see, for example, Pellicani (1976, pp. 30–31), Ruffolo (1978a, pp. 65–7, 1978b, pp. 65–7), Rullani (1988, commented on by Jossa, 1988b) and Nuti (1988).
12. Sergio Riscossa has written: 'I speak with reluctance of efficiency comparisons between capitalist economies and socialist economies because this presupposes that the two systems have identical objectives and differ only in the means to achieve them, whilst usually this is not the case' (Ricossa, 1989, p. 73). See also, for example, Myrdal (1960, Chapter 6), Drèze (1985, p. 17) and Dasgupta (1989, pp. 112–14).
13. Indeed, according to Rawls' *A Theory of Justice* (1971), economic arguments are of no importance in evaluating the relative merits of capitalism and self-management because the greater liberty guaranteed to workers by self-management, even if it is not very substantial, cannot be exchanged for the greater efficiency of capitalistic firms. As Barry writes, the consequence of a lexicographic ordering of the two principles is that, in comparing two situations, the smallest gain justified on the grounds of the first principle is of greater importance than any gain (of whatever size) justified on the basis of the second principle, and any gain achieved with reference to the first principle is sufficient to justify any sacrifice in the form of loss in terms of the second (Barry, 1993, pp. 87–8). This theory which Barry rightly defines as bizarrely extremist (Barry, 1993, p. 88) cannot be shared; however, in the more recent *Political Liberalism* Rawls has made his ideas more acceptable, clarifying that the theory of justice as fairness is a purely political concept (Rawls, 1993, introduction).

Bibliography

Aa.Vv. (1972), *Fabbrica e società* (*Factory and Society*), F. Angeli, Milan.

Aa.Vv. (1974a), *Essenza e limiti del marginalismo nelle teorie economiche*, Atti della X riunione scientifica della Società Italiana degli Economisti (*The Essence and Limits of Marginalism in Economic Theory*, Proceedings of the 10th Scientific Conference of the Italian Society of Economists), Giuffré, Milan.

Aa.Vv. (1974b), *Il sistema sovietico tra Stalin e Breznev* (*The Soviet System from Stalin to Breznev*), Quaderni di Mondoperaio, Rome.

Aa.Vv. (1988), *L'economia mondiale in trasformazione; contributi per una comparazione tra sistemi economici* (*The Changing World Economy; Contributions for a Comparison of Economic Systems*), F. Angeli, Milan.

Aa.Vv. (1994), *Il mercato della proprietà e del controllo delle imprese: aspetti teorici e istituzionali* (*The Firm Ownership and Control Market: Theoretical and Institutional Aspects*), Banca d'Italia, Rome.

Abdel-Fadil, M. (1975), *La planification des prix en économie socialiste* (*The Planning of Prices in Socialist Economies*), P.U.F., Paris.

Abell, P. (1969), 'An Equitarian Market Socialism', in Le Grand and Estrin (eds) (1969).

Abell, P. (1983), 'The Viability of Producer Cooperation', in *International Yearbook of Organizational Democracy*, Wiley, New York.

AISSEC (Associazione italiana per lo studio dei sistemi economici comparati – The Italian Association for the Comparative Study of Economic Systems) (1993), 9° Convegno Scientifico (9th Scientific Conference), mimeo.

Akerlof, G.A. (1970), 'The Market for "Lemons": Quality, Uncertainty and the Market Mechanism', *Quarterly Journal of Economics*, vol. 84, no. 3.

Alchian, A.A. (1984), 'Specificity, Specialization, and Coalitions', *Zeitschrift für Gesamte Staatswissenschaft*, vol. 140, no. 1, March.

Alchian, A.A. (1987), 'Property Rights', in Eatwell, Milgate and Newman (eds) (1987).

Alchian, A.A and Allen, W.R. (1983), *Exchange and Production*, 3rd edn, Wadsworth Publishing Company, Belmont.

Alchian, A.A. and Demsetz, H. (1972), 'Production, Information Costs and Economic Organization', *American Economic Review*, vol. 62, December.

Althusser, L. (1965), *Per Marx* (*For Marx*), Ital. transl. from French, Editori Riuniti, Rome, 1969.

Amin, S. (1972), *Come funziona il capitalismo?* (*How Does Capitalism Work?*), Ital. transl., Jaca Book, Milan, 1973.

Anyadike-Danes, M.K. (1985), 'Dennis Robertson and Keynes's General Theory', in Harcourt (ed.) (1985).

ARA (Azione e Ricerca per l'Alternativa – Action and Research for Alternative Options) (1977), *Quale socialismo, quale Europa* (*What Socialism, What Europe*), Feltrinelli, Milan.

Arcelli, M. (1970), 'La controversia sul capitale e la teoria neoclassica' (The Debate on Capital Theory and Neo-classical Theory), *L'Industria*, no. 3.

Archibald, G.C. (1992), *Information Incentives and the Economics of Control*, Cambridge University Press, Cambridge.

Arnold, R.A. (1980), 'Hayek and Institutional Reform', reprinted in Wood and Woods (eds) (1991), vol. III.

Arrow, K.J. (1951), 'An Extension of the Basic Theorems of Classical Welfare Economics', *Proceedings of the 2nd Berkeley Symposium on Mathematical Statistics and Probability*, University of California Press, Berkeley.

Arrow, K.J. (1974), 'General Economic Equilibrium: Purpose, Analytic Techniques, Collective Choice', *American Economic Review*, vol. 64, June.

Arrow, K.J. and Debreu, G. (1954), 'Existence of an Equilibrium for Competitive Economy', *Econometrica*, vol. 22.

Arrow, K.J. and Hahn, F.H. (1971), *General Competitive Analysis*, Holden-Day, San Francisco.

Arrow, K.J. and Hurwicz, L. (1960), 'Some Remarks on the Equilibria of Economic Systems', *Econometrica*, vol. 28, July.

Arthur, W.B. (1989), 'Competing Technologies Increasing Returns, and Lock-in by Historical Events', *Economic Journal*, vol. 99, no. 1.

Artoni, R. (ed.) (1991), *Teoria economica ed analisi delle istituzioni* (*Economic Theory and the Analysis of Institutions*), Il Mulino, Bologna.

Askildsen, J.E. (1988), 'Allocation of Capital and Labor in a Labor-owned Firm Consisting of Heterogeneous Workers', *Scandinavian Journal of Economics*, vol. 90, no. 4.

Åslund, A. (ed.) (1992), *Market Socialism or the Restoration of Capitalism?*, Cambridge University Press, Cambridge.

Atkinson, A.B. (ed.) (1993), *Alternatives to Capitalism: The Economics of Partnership*, Macmillan, London.

Auerbach, A.J. (ed.) (1988), *Corporate Takeovers: Causes and Consequences*, NBER, Chicago.

Azariadis, C. (1975), 'Implicit Contracts and Underemployment Equilibria', *Journal of Political Economy*, vol. 83, December.

Azariadis, C. (1979), 'Implicit Contracts and Related Topics: A Survey', in Hornstein, Grice and Webb (eds) (1979).

Baccianini, M. and Tartarini, A. (eds) (1969), *Socialism ou Barbarie* (*Socialism or Barbarity*), Guanda, Parma.

Baily, M.N. (1974), 'Wages and Employment Under Uncertain Demand', *Review of Economic Studies*, vol. 41, January.

Baldassarri, M., Paganetto, L. and Phelps, E.S. (eds) (1993), *Privatization Processes in Eastern Europe*, Macmillan, London.

Barber, W.J. (ed.) (1991), *Perspectives on the History of Economic Thought*, vol. 5, Edward Elgar, Aldershot.

Barca, F. (1994), 'Allocazione e riallocazione della proprietà e del controllo delle imprese: ostacoli, intermediari, regole' (The Allocation and Reallocation of Firm Ownership and Control: Obstacles, Intermediaries, Rules), in Aa.Vv. (1994).

Bardhan, P. (1993), 'On Tackling the Soft Budget Constraint in Market Socialism', in Bardhan and Roemer (eds) (1993a).

Bardhan, P. and Roemer, J.E. (1992), 'Market Socialism: A Case for Rejuvenation', *Journal of Economic Perspectives*, vol. 6, no. 3, Summer.

Bardhan, P. and Roemer, J.E. (eds) (1993a), *Market Socialism: The Current Debate*, Oxford University Press, New York.

Bardhan, P. and Roemer, J.E. (1993b), 'Introduction', in Bardhan and Roemer (eds) (1993a).

Bardhan, P. and Roemer, J.E. (1994), 'On the Workability of Market Socialism', *Journal of Economic Perspectives*, vol. 8, no. 2, Spring.

Barone, E. (1908), 'The Ministry of Production in the Collectivist State', in Hayek (ed.) (1935a).

Barry, B. (1973), *La teoria liberale della giustizia* (*The Liberalist Theory of Justice*), Ital. transl., Giuffré, Milan, 1994.

Barry, N.P. (1993), 'The Social Market Economy', in Paul, Miller and Paul (eds) (1993).

Bartlett, W. and Uvalic, M. (1986), 'Labour-managed Firms, Employee Participation and Profit Sharing: Theoretical Perspectives and European Experience', EUI, Working Paper, no. 86/236.

Bartlett, W. et al. (1992), 'Labour Managed vs. Private Firms: An Empirical Comparison of Cooperative and Private Firms in Central Italy', *Industrial and Labour Relations Review*, vol. 45, no. 1.

Barzel, Y. (1987a), 'The Entrepreneur's Reward for Self-Policing', *Economic Inquiry*, vol. 25, no. 1, January.

Barzel, Y. (1987b), 'Knight's "Moral Hazard" Theory of Organization', *Economic Inquiry*, vol. 25, January.

Bator, F. (1958), 'The Anatomy of Market Failure', *Quarterly Journal of Economics*, vol. 72, August.

Bauer, T. (1989), 'The Unclearing Market', in Elster and Moene (eds) (1989a).
Bauer, T. (1990), 'Reforming the Planned Economy: The Hungarian Experience', *The Annals of the American Academy of Political and Social Science*, vol. 10, January.
Baumol, W.J. (1961), *Economic Theory and Operations Analysis*, Prentice Hall, Englewood Cliffs, NJ.
Baumol, W.J. (1965), *Welfare Economics and the Theory of the State*, 2nd edn, Harvard Economic Press, Cambridge, Mass.
Baumol, W.J. (1982), 'Contestable Markets: An Uprising in the Theory of Industry Structure', *American Economic Review*, vol. 72, March.
Baumol, W.J. and Bradford, D.F. (1970), 'Optimal Departures from Marginal Cost Pricing', *American Economic Review*, vol. 60, June.
Baumol, W.J., Panzar, J.C. and Willig, R.D. (1982), *Contestable Markets and the Theory of Industry Structure*, Harcourt Brace Jovanovich, San Diego.
Becattini, G. (1989), 'Mercato e comunismo nel pensiero di A. Marshall' (Market and Communism in A. Marshall's Thought), in Jossa (ed.) (1989a).
Beckerman, W. (1989), 'How Large a Public Sector?', in Helm (ed.) (1989a).
Bedeschi, G. (1972), *Alienazione e feticismo nel pensiero di Marx* (*Alienation and Fetishism in Marx's Thought*), Laterza, Bari.
Bell, D. (1960), *The End of Ideology; on the Exhaustion of Political Ideas in the Fifties*, Free Press of Glencoe, New York.
Bellas, C.J. (1972), *Industrial Democracy and the Worker-Owned Firm: A Study of Twenty-one Plywood Companies in the Pacific North-West*, Praeger Publisher, New York.
Bellasi, P., La Rosa, M. and Pellicciari, G. (1972), 'Partecipazione operaia e autogestione' (Worker Participation and Labour Management), in Aa.Vv. (1972).
Benham, L. and Keefer, P. (1991), 'Voting in Firms: The Role of Agenda Control, Size and Voter Homogeneity', *Economic Inquiry*, vol. 29, no. 4, October.
Ben-Ner, A. (1984), 'On the Stability of the Cooperative Type of Organization', *Journal of Comparative Economics*, vol. 8, no. 3, September.
Ben-Ner, A. (1988), 'Comparative Empirical Observations on Worker-Owned and Capitalist Firms', *International Journal of Industrial Organization*, vol. 6, no. 1.
Bennett, J. (1984) 'A Model of Income Distribution in a Revenue-Sharing Firm', *Journal of Comparative Economics*, vol. 8, no. 3, September.
Bennett, J. (1988) 'Optimal Wage Rates and Profit Sharing in a Firm', in Jones and Svejnar (eds) (1988).
Berend, I.T. (1977), 'Current Hungarian Economic Policy in Historical Perspective', *Acta Oeconomica*, vol. 18, no. 2.

Bergson, A. (1938), 'A Reformulation of Certain Aspects of Welfare Economics', *Quarterly Journal of Economics*, vol. 52, no. 2, February (at that time the author signed his name A. Burk).
Bergson, A. (1948), 'Socialist Economics', in Ellis (ed.) (1948).
Berle, A. and Means, G. (1932), *The Modern Corporation and Private Property*, rev. edn 1967, Harcourt Brace & World, New York.
Berliner, J.S. (1993), 'Innovation, the Soviet Union, and Market Socialism', in Bardhan and Roemer (eds) (1993a).
Berman, K.V. (1982), 'The United States of America: A Cooperative Model for Worker Management', in Stephen (ed.) (1982).
Berman, K.V. and Berman, M.D. (1978), 'The Long-run Analysis of the Labor-managed Firm: Comment', *American Economic Review*, vol. 68, September.
Berman, K.V. and Berman, M.D. (1989), 'An Empirical Test of the Theory of the Labour-managed Firm', *Journal of Comparative Economics*, vol. 13, no. 2, June.
Berman, M.D. (1977), 'Short Run Efficiency in the Labour-managed Firm', *Journal of Comparative Economics*, vol. 1, no. 3.
Bettelheim, C. (1966), *Problèmes théoriques et pratiques de la planification* (*The Theoretical and Practical Problems of Planning*), Maspero, Paris.
Bewley, T. (ed.) (1986), *Advances in Economic Theory*, Cambridge University Press, Cambridge.
Blaug, M. (1974), *The Cambridge Revolution: Success or Failure?*, Institute of Economic Affairs, London.
Blaug, M. (1993), 'From Marx to Mises: Post-Capitalist Society and the Challenge of Economic Calculation', review of D.R. Steele, *Economic Journal*, vol. 103, November.
Blinder, A. (ed.) (1990), *Paying for Productivity*, The Brookings Institution, Washington.
Bliss, L.J. (1972), 'Prices, Markets and Planning', *Economic Journal*, vol. 82, March.
Bobbio, N. (1970), 'Dell'uso delle grandi dicotomie nella teoria del diritto' (The Uses of the Great Dichotomies in Legal Theory), reprinted in Bobbio (1977).
Bobbio, N. (1977), *Dalla struttura alla funzione; nuovi studi di teoria del diritto* (*From Structure to Function: New Studies in Legal Theory*), Edizioni di Comunità, Milan.
Bobbio, N. (1994a), *Elogio della mitezza e altri scritti morali* (*A Eulogy of Meekness and Other Moral Writings*), Linea d'ombra, Milan.
Bobbio N. (1994b), 'Elogio della mitezza' (A Eulogy of Meekness), in Bobbio (1994a).

Boettke, P.J. (1995), 'Hayek's The Road to Serfdom Revisited: Government Failure in the Argument Against Socialism', *Eastern Economic Journal*, vol. 2, no. 1.

Boiteux, M. (1951), 'Le "revenue distribuable" et les pertes économiques' ('Distributable Profits' and Economic Losses), *Econometrica*, vol. 19, April.

Bollino, A. and Di Pietro, A. (1991), 'The Political Economy of the Free Rider, the Prisoner's Dilemma and the Constitutional Contract', *Economia delle scelte pubbliche*, no. 2.

Bonin, J.P. (1980), 'On the Theory of the Competitive Labor-managed Firm Under Price Uncertainty: A Correction', *Journal of Comparative Economics*, vol. 4, no. 3.

Bonin, J.P. (1985), 'Labor Management and Capital Maintenance: Investment Decision in Labor Managed Firms', in Jones and Svejnar (eds) (1985a).

Bonin, J.P. and Fukuda, W. (1986), 'The Multifactor Illyrian Firm Revisited', *Journal of Comparative Economics*, vol. 10, no. 2.

Bonin, J.P., Jones, D.C. and Putterman, L. (1993), *Theoretical and Empirical Studies of Producer Cooperatives: Will the Twain Ever Meet?*, Department of Economics, Hamilton College, Clinton, NY, Working Paper no. 91/4.

Bonin, J.P. and Putterman, L. (1987), *Economics of Cooperation and the Labor-managed Economy, Fundamentals of Pure and Applied Economics*, no. 4, Harvard Academic Pub., New York.

Bourdet, Y. (1974), *Pour l'autogestion* (*In Favour of Self-management*), Seghers, Paris.

Bowles, S. (1974), 'Economists as Servants of Power', *American Economic Review*, vol. 64, May.

Bowles, S. (1985), 'The Production Process in a Competitive Economy: Walrasian, Neo-Hobbesian, and Marxian Models', *American Economic Review*, vol. 75, no. 1.

Bowles, S. and Gintis, H. (1986), *Democracy and Capitalism*, Basic Books, New York.

Bowles, S. and Gintis, H. (1993a), 'Post-Walrasian Political Economy', in Bowles, Gintis and Gustafsson (eds) (1993).

Bowles, S. and Gintis, H. (1993b), 'The Democratic Firms: An Agency-Theoretic Evaluation', in Bowles, Gintis and Gustafsson (eds) (1993).

Bowles, S. and Gintis, H. (1994), 'Credit Market Imperfections and the Incidence of Worker-Owned Firms', *Metroeconomica*, vol. 45, no. 3.

Bowles, S., Gintis, H. and Gustafsson, B. (eds) (1993), *Markets and Democracy: Participation, Accountability and Efficiency*, Cambridge University Press, Cambridge.

Bradley, K. and Gelb, A. (1983), *Cooperation at Work. The Mondragon Experience*, Heinemann Educational Books, London.

Braudel, F. (1977), *Afterthoughts on Material Civilization and Capitalism*, Johns Hopkins University Press, New York.

Braverman, H. (1974), *Labor and Monopoly Capital: The Degradation of Work in the Twentieth Century*, Monthly Review Press, New York.

Brealey, R.A. and Myers, S.C. (1988), *Principles of Corporate Finance*, McGraw-Hill, New York.

Brewer, A.A. and Browning, M.J. (1982), 'On the Employment Decision of a Labour-managed Firm', *Economica*, vol. 49, no. 194.

Brown, M., Sato, K. and Zarenka, P. (eds) (1976), *Essays in Modern Capital Theory*, North-Holland, Amsterdam.

Brus, W. (1964), *The Market in a Socialist Economy*, Eng. transl., Routledge & Kegan Paul, London.

Brus, W. (1975), *Socialist Ownership and Political Systems*, Routledge & Kegan Paul, London.

Brus, W. and Laski, K. (1989), *From Marx to the Market: Socialism in Search of an Economic System*, Clarendon Press, Oxford.

Bryson, P.J. (1976), *Scarcity and Control in Socialism*, Lexington Books, Lexington.

Buber, M. (1950), *Pfade in Utopia* (*Routes in Utopia*), Verlag Lambert Schmeider, Heidelberg.

Buchanan, A. (1985), *Ethics, Efficiency and Market*, Rowman & Allanheld, Totowa, NJ.

Buchanan, J.M. (1975), 'A Contractarian Paradigm for Applying Economic Theory', *American Economic Review*, vol. 65, May.

Bucharin, N. (1920), *Economia del periodo di trasformazione* (*The Economy of the Transitional Period*), Ital. transl., Jaca Books, Milan, 1971.

Buck, T. (1980), *Comparative Industrial Systems*, St. Martin's Press, London.

Cable, J. and Fitzroy, F. (1980), 'Cooperation and Productivity: Some Evidence from the West German Experience', in Clayre (ed.) (1980).

Caldwell, B.J. (1988), 'Hayek's Transformation', *History of Political Economy*, vol. 20, no. 4.

Calvo, C.A. (1979), 'Quasi-Walrasian Theory of Unemployment', *American Economic Review*, vol. 69, no. 2, May.

Caravale, G. (ed.) (1991), *Marx and Modern Economic Analysis*, vol. I, Edward Elgar, Aldershot.

Caravale, G. (1992), 'La nozione di sfruttamento e l'ingiustizia sociale' (The Notion of Exploitation and Social Injustice), *Il Ponte*, no. 3, reprinted in Sylos Labini (ed.) (1994).

Carson, R. (1977), 'A Theory of Cooperatives', *Canadian Journal of Economics*, vol. 10, no. 4.

Cave, M. (1980), *Computers and Economic Planning: The Soviet Experience*, Cambridge University Press, Cambridge.

Cave, M. and Nare, P. (1981), *Alternative Approaches to Economic Planning*, Macmillan, London.

CESPE (1988), *Contributi alla ricerca teorica sull'impresa autogestita (Contributions to Theoretical Research on the Labour-managed Firm)*, CESPE Papers, no. 16, March.

Chalkley, M. and Estrin, S. (1992), 'Incomes, Savings, and Growth in a Labor-Managed Economy', in Jones and Svejnar (eds) (1992).

Chandler, A.D. and Daems, H. (eds) (1980), *Managerial Hierarchies*, Harvard University Press, Cambridge, Mass.

Chattopadhyay, P. (1972), 'L'economia politica del periodo di transizione' (The Political Economy of the Transition Period), *Monthly Review*, October, reprinted in Marchionatti (ed.) (1978).

Cheung, S.N.S. (1983), 'The Contractual Nature of the Firm', *Journal of Law and Economics*, vol. 26, April.

Chillemi, O. (1981), 'Sul regime di capitale nell'impresa autogestita' (On Capital Ownership in the Labour-managed Firm), *Rivista internazionale di scienze economiche e commerciali*, vol. 28, no. 1–2.

Chillemi, O. and Gui, B. (1992), 'On the Performance of Worker-managed Firms: Does Participation Only Exert Technical Effects', *Journal of Comparative Economics*, vol. 16, no.2.

Chilosi, A. (1986), 'Self-Managed Socialism with "Free Mobility of Labor"', *Journal of Comparative Economics*, vol. 10, no. 3, September.

Chilosi, A. (1988), 'Una breve guida alla letteratura rilevante per l'analisi della questione distributiva nel socialismo (reale e ipotetico)' (A Short Guide to the Literature on the Issue of Distribution Under (Real and Hypothetical) Socialism), in Aa.Vv. (1988).

Chilosi, A. (1990), 'Le politiche distributive nelle economie del socialismo "reale"' (Distribution Policies in the Countries Under Socialist 'Rule'), in De Vincenti and Mulino (eds) (1990).

Chilosi, A. (ed.) (1992), *L'economia del periodo di transizione (The Economy of the Transitional Period)*, Il Mulino, Bologna.

Cipriani, S. (ed.) (1990), *Nuove frontiere dell'etica economica (The New Frontiers of Ethics in Economic Life)*, Editrice Ave, Rome.

Clark, R.W. (1971), *Einstein: The Life and Times*, World Publishing Company, New York.

Clarke, T. (1991), 'Democracy, Integration and Commercial Survival: The Webbs on Associations of Producers', in Russel and Rus (eds) (1991).

Clayre, A. (ed.) (1980), *The Political Economy of Cooperation and Participation: A Third Sector*, Oxford Economic Press, Oxford.

Clayton, G., Gilbert, J.C. and Sedwick, R. (eds) (1971), *Monetary Theory and Monetary Policy in the 1970's*, Clarendon Press, Oxford.

Clower, R.W. (1971), 'Theoretical Foundations of Monetary Policy', in Clayton, Gilbert and Sedwick (eds) (1971).

Coase, R. (1960), 'The Problem of Social Costs', *Journal of Law and Economics*, vol. 3, no. 1.

Cohen, G.A. (1978), *Karl Marx's Theory of History: A Defense*, Clarendon Press, Oxford.

Cohen, J. and Rogers, J. (1993), 'Associative Democracy', in Bardhan and Roemer (1993a.)

Cole, G.D.H. (1920), *Chaos and Order in Industry*, Gollancz, London.

Colletti, L. (1970a), *Ideologia e Società (Ideology and Society)*, Laterza, Bari.

Colletti, L. (1970b), 'Mandeville, Rousseau e Smith' (Mandeville, Rousseau and Smith), in Colletti (1970a).

Colombo, A. (ed.) (1994), *Crollo del comunismo sovietico e ripresa dell'utopia (The Collapse of Communism in the Soviet Union and the Re-emergence of Utopia)*, Edizioni Dedalo, Bari.

Colonna, M., Hagemann, H. and Hamouda, O. (eds) (1994), *Capitalism, Socialism and Knowledge. The Economics of F.A. Hayek*, vol. II, Edward Elgar, Aldershot.

Conte, M.A. and Svejnar, J. (1988), 'Productivity Effects of Worker Participation in Management, Profit Sharing, Worker Ownership of Assets and Unionization in U.S. Firms', *International Journal of Industrial Organization*, vol. 6.

Conte, M.A. and Svejnar, J. (1990), 'The Performance Effect of Employee Ownership Plans', in Blinder (ed.) (1990).

Conte, M.A. and Ye, M.-H. (1995), 'An Overlapping Generations Model of Investment in Labor-managed Firms', in Jones and Svejnar (eds) (1995).

Coser, L. (1956), *The Functions of Social Conflict*, Free Press, Glencoe.

Cox, O. (1964), *Capitalism as a System*, Monthly Review Press, New York.

Craig, B. and Pencavel, J. (1992), 'The Behavior of Workers Cooperatives: The Plywood Companies of the Pacific Northwest', *American Economic Review*, vol. 82, no. 5, December.

Craig, B. and Pencavel, J. (1995), 'Participation and Productivity: A Comparison of Workers Cooperatives and Conventional Firms in the Plywood Industry', *Brooking Papers in Economic Activity: Microeconomics*, 1995.

Crawford, V.P. (1985), 'Efficient and Durable Decision Rules: A Reformulation', *Econometrica*, vol. 53, no. 4.

Croce B. (1931), 'L'economia filosofizzata ed attualizzata' (Economics Philosophized and Actualized), *La Critica*, vol. 29, no. 1

Crosland, C.A.R. (1956), *The Future of Socialism*, Jonathan Cape, London.

Cubeddu, R. (1992), *Il liberalismo della scuola austriaca. Menger, Mises, Hayek* (*The Liberalist Theory of the Austrian School. Menger, Mises, Hayek*), Ed. Morano, Naples.

Cubeddu, R. (1993), 'Remarks on Hayek's Critique of Social Justice', *Economia delle scelte pubbliche*, vol. 11, no. 2–3, May–December.

Cubeddu, R. and Vannucci, A. (1993), 'Economic Planning and the Austrian School', *Revue européenne des sciences sociales*, vol. 31, no. 96.

Cugno, F. and Ferrero, M. (1991), 'Il problema degli incentivi al lavoro nella produzione cooperativa' (The Issue of Worker Incentives in Cooperative Production), in Zamagni (ed.) (1991).

Cunningham, F. (1987), *Democratic Theory and Socialism*, Cambridge University Press, Cambridge.

Cuomo, G. (1993), 'Sottoinvestimento, diritti di proprietà ed orizzonte temporale nelle imprese autogestite' (Underinvestment, Property Rights and Time Horizon in Labour-managed Firms), in AISSEC (1993), mimeo.

Czikos-Nagy, B. (1978), 'The Hungarian Reform after Ten Years', *Soviet Studies*, vol. 30, October.

Daems, H. (1980), 'The Rise of the Modern Industrial Enterprise: A New Perspective', in Chandler and Daems (eds) (1980).

Dahl, R. (1985), *A Preface to Economic Democracy*, Polity Press, Cambridge.

Dahrendorf, R. (1957), *Class and Conflict in Industrial Society*, Eng. transl., Routledge & Kegan Paul, London, 1959.

Dahrendorf, R. (1995), 'Economic Opportunity, Civil Society and Political Liberty', paper presented to the Conference UNRISD, 'Rethinking Social Development', Copenhagen, 11–12 March.

Damjanovic, P. (1962), 'Les conceptions de Marx sur l'autogestion sociale' (Marx's Ideas on Social Self-management), *Praxis*, no. 1.

D'Andrea Tyson, L. and Popper, S. (1988), 'The New Hungarian Economic Reforms and Their Effects on Enterprise Behavior', in Jones and Svejnar (eds) (1988).

Dasgupta, P. (1982), 'Utilitarianism, Information and Rights', in Sen and Williams (eds) (1982).

Dasgupta, P. (1989), 'Positive Freedom, Markets, and the Welfare State', in Helm (ed.) (1989a).

Dasgupta, P. and Stiglitz, J.E. (1988), 'Potential Competition, Actual Competition and Economic Welfare', *European Economic Review*, vol. 32, no. 2.

Davies, E.G. (1985), 'Mill, Socialism and the English Romantics: An Interpretation', *Economica*, vol. 52, August.

Davies, R.W. (1990), 'Gorbachev's Socialism in Historical Perspective', *New Left Review*, no. 179, January–February.

Debreu, G. (1951), 'The Coefficient of Resource Utilization', *Econometrica*, vol. 19, July.

Debreu, G. (1959), *Theory of Value: An Axiomatic Analysis of Economic Equilibrium*, John Wiley & Sons, New York.

Defourny, J. (1992), 'Comparative Measures of Technical Efficiency for 500 French Workers' Cooperatives', in Jones and Svejnar (eds) (1992).

Defourny, J., Estrin, S. and Jones, D.C. (1985), 'The Effects of Workers' Participation on Enterprise Performance', *International Journal of Industrial Organization*, vol. 3, no. 2, June.

Delucky, R. (1994), 'Marxism and Self-Management', in Nove and Thatcher (eds) (1994).

Demsetz, H. (1988a), *Ownership, Control and the Firm: The Organization of Economic Activity*, vol. I, Basil Blackwell, Oxford.

Demsetz, H. (1988b), 'The Structure of Ownership and the Theory of the Firm', in Demsetz (1988a).

Demsetz, H. (1988c), 'The Theory of the Firm Revisited', in Demsetz (1988a).

Demsetz, H. (1988d), 'The Structure of Corporate Ownership: Causes and Consequences', in Demsetz (1988a).

Desai, M. (1974), 'La teoria dello sviluppo capitalistico in M. Dobb' (The Theory of Capitalist Growth in M. Dobb), in *Annali dell'Istituto Giangiacomo Feltrinelli*, Milan.

De Vincenti, C. and Mulino, M. (eds) (1990), *Il difficile sentiero della perestroika; le economie dell'Est negli anni '80* (*The Difficult Progress of Perestroika; the Eastern Economies in the 1980s*), Liguori, Naples.

Dewatripont, M. and Maskin, E. (1993), 'Centralization of Credit and Long-Term Investment', in Bardhan and Roemer (eds) (1993a).

Di Leo, R. (1970), *Operai e sistema sovietico* (*Workers and the Soviet System*), Laterza, Bari.

Di Quattro, A. (1978), 'Alienation and Justice in the Market', *American Political Science Review*, vol. 72, reprinted in Wood and Woods (eds) (1991).

Di Quattro, A. (1986), 'Rawls versus Hayek', *Political Theory*, vol. 14, May.

Dickinson, H.D. (1933), 'Price Formation in a Socialist Community', *Economic Journal*, vol. 43, June.

Dickinson, H.D. (1939), *The Economics of Socialism*, Oxford University Press, New York.

Dickinson, Z.C. (1960), 'Fred Taylor's Views on Socialism', *Economica*, vol. 27, February.

Dobb, M. (1928), *Russian Economic Development Since the Revolution*, Routledge, London.

Dobb, M. (1933), 'Economic Theory and the Problem of a Socialist Economy', reprinted in Dobb (1955).

Dobb, M. (1935), 'Economic Theory and Socialist Economy: A Reply', *Review of Economic Studies*, vol. II, February.

Dobb, M. (1937), *Political Economy and Capitalism; Essays in Economic Tradition*, 2nd edn, Routledge, London, 1940.

Dobb, M. (1939a), 'Economists and the Economics of Socialism', reprinted in Dobb (1955).

Dobb, M. (1939b), 'A Note on Saving and Investment in Socialist Economy', reprinted in Dobb (1955).

Dobb, M. (1953), 'A Review of the Discussion Concerning Economic Calculation in a Socialist Economy', reprinted in Dobb (1955).

Dobb, M. (1955), *On Economic Theory and Socialism. Collected Papers*, Routledge & Kegan, London.

Dobb, M. (1956), Voce 'Pianificazione' (The entry 'Planning'), in Napoleoni (ed.) (1956).

Dobb, M. (1966), *Soviet Economic Development Since 1917*, 6th edn, Routledge, London.

Dobb, M. (1969), *Welfare Economics and the Economics of Socialism*, Cambridge University Press, Cambridge.

Dobb, M. (1973), *Theories of Value and Distribution since Adam Smith*, Cambridge University Press, Cambridge.

Domar, E.D. (1966), 'The Soviet Collective Farm as a Producer Cooperative', *American Economic Review*, vol. 56, no. 4.

Domar, E.D. (1974), 'Poor Old Capitalism: A Review Article', *Journal of Political Economy*, vol. 82, no. 6, November–December.

Dostaler, G. and Ethier, D. (eds) (1989), *Friedrich Hayek: Philosophie, économie et politique* (*Friedrich Hayek: Philosophy, Economics and Politics*), Economica, Paris.

Dow, G. (1986), 'Control Rights, Competitive Markets and the Labor Management Debate', *Journal of Comparative Economics*, vol. 10, no. 1, March.

Dow, G. (1993a), 'Democracy Versus Appropriability: Can Labour-managed Firms Flourish in a Capitalist World?', in Bowles, Gintis and Gustaffsson (eds) (1993).

Dow, G. (1993b), 'The Appropriability Critique of Transaction Cost Economics', in Pitelis (ed.) (1993).

Drewnowski, J. (1961), 'A Dual Preference System', *Journal of Political Economy*, no. 4, August, reprinted in Leeman (ed.) (1963).

Drèze, J.H. (1976), 'Some Theories of Labour Management and Participation', *Econometrica*, vol. 44, no. 6.

Drèze, J.H. (1985), 'Labor Management and General Equilibrium', in Jones and Svejnar (eds) (1985a).

Drèze, J.H. (1989), *Labour-Management, Contracts and Capital Markets. A General Equilibrium Approach*, Basil Blackwell, Oxford.

Drèze, J.H. (1993), 'Self-Management and Economic Theory: Efficiency, Funding and Employment', in Bardhan and Roemer (eds) (1993a).

Dubravcic, D. (1970), 'Labour as an Entrepreneurial Input – An Essay on the Theory of the Producer Cooperative Economy', *Economica*, vol. 37, no. 147.

Durbin, E.M.F. (1936), 'Economic Calculus in a Planned Economy', *Economic Journal*, vol. 46, December.

Durbin, E.M.F. (1947), 'A Note on Dr. Lerner's "Dynamical" Propositions', *Economic Journal*, vol. 57, September.

Durkheim, E. (1928), *Socialism and Saint-Simon*, Eng. transl., Routledge & Kegan Paul, London, 1959.

Eatwell, J., Milgate, M. and Newman, P. (eds) (1987), *The New Palgrave*, Macmillan, London.

Edwards, R. (1979), *Contested Terrain: The Transformation of the Workplace in the Twentieth Century*, Basic Books, New York.

Eggertsson, T. (1990), *Economic Behavior and Institutions*, Cambridge University Press, Cambridge.

Einaudi, L. (1932), 'Il problema dell'ozio' (The Problem of Idleness), *La Cultura*, vol. XI, no. 1, January–March.

Ellerman, D.P. (1982), *Economics, Accounting and Property Theory*, Heath, Lexington.

Ellerman, D.P. (1984), 'Entrepreneurship in the Mondragon Cooperatives', *Review of Social Economy*, vol. 12, no. 3.

Ellerman, D.P. (1986), 'Horizon Problems and Property Rights in Labour Managed Firms', *Journal of Comparative Economics*, vol. 10, no. 1.

Ellerman, D.P. (1990), *The Democratic Worker-Owned Firm*, Unwin Hyman, Boston.

Ellerman, D.P. (1992a), *Property and Contract in Economics*, Blackwell, Oxford.

Ellerman, D.P. (1992b), 'Property Rights in Capitalist and Labour-managed Firms', in Jones and Svejnar (eds) (1992).

Ellis, H.S. (ed.) (1948), *A Survey of Contemporary Economics*, vol. I, Richard Irwin, Homewood, Ill.

Elster, J. (1985), *Making Sense of Marx*, Cambridge University Press, Cambridge.

Elster, J. and Moene, K.O. (eds) (1989a), *Alternatives to Capitalism*, Cambridge University Press, Cambridge.

Elster, J. and Moene, K.O. (1989b), 'Introduction', in Elster and Moene (eds) (1989a).

Engels, F. (1875), *Lettera a Bebel (A Letter to Bebel)*, reprinted in Marx and Engels (1976).

Engels, F. (1878), *Antidüring*, Eng. transl., Lawrence & Wishart, London, 1955.

Engels, F. (1886), *Ludwig Feuerbach and the End of Classical German Philosophy*, reprinted in Marx and Engels (1958), vol. II.

Erlich, A. (1978), 'Dobb and the Marx–Feldman Model: A Problem in Soviet Economic Strategy', *Cambridge Journal of Economics*, vol. 2, no. 2.

Estrin, S. (1983), *Self-management: Economic Theory and Yugoslav Practice*, Cambridge University Press, Cambridge.

Estrin, S. (1991), 'Some Reflections on Self Management, Social Choice and Reform in Eastern Europe', *Journal of Comparative Economics*, vol. 15, no. 2, June.

Estrin, S. and Jones, D.C. (1995), 'Workers' Participation, Employee Ownership, and Productivity: Results from French Producer Cooperatives', in Jones and Svejnar (eds) (1995).

Estrin, S., Jones, D.C. and Svejnar, J. (1987), 'The Productivity Effects of Workers' Participation: Producer Cooperatives in Western Europe', *Journal of Comparative Economics*, vol. 11, no. 1, March.

Eswaran, M. and Kotwal, A. (1989), 'Why are Capitalists the Bosses?', *Economic Journal*, vol. 99, March.

Etzioni, A. (1985), 'Opening the Preferences: A Socio-economic Research Agenda', *Journal of Behavioral Economics*, Ital. transl. 'Andare oltre le preferenze esogene: un compito urgenze per la ricerca socio-economica', in Franzini and Messori (eds) (1991).

Fairburn, J. and Kay, J.A. (eds) (1989), *Merger and Mergers Policy*, 2nd edn, Oxford University Press, Oxford.

Fanning, C.M. and McCarthy, T. (1986), 'A Survey of the Economic Hypotheses Concerning the Non-Viability of Labor-Directed Firms in a Capitalist Economy', in Jansson and Hellmark (eds) (1986).

Fehr, E. (1993), 'The Simple Analytics of a Membership Market in a Labour-managed Economy', in Bowles, Gintis and Gustafsson (eds) (1993).

Feinstein, C.H. (ed.) (1967), *Socialism, Capitalism and Economic Growth*, Cambridge University Press, Cambridge.

Fitzgibbons, A. (1988), *Keynes's Vision: A New Political Economy*, Clarendon Press, Oxford.

Fitzroy, F.R. and Kraft, K. (1986), 'Profitability and Profit Sharing', *Journal of Industrial Economics*, vol. 35, no. 2, December.

Fitzroy, F.R. and Kraft, K. (1987a), 'Cooperation, Productivity and Profit Sharing', *Quarterly Journal of Economics*, vol. 102, no. 1, February.

Fitzroy, F.R. and Kraft, K. (1987b), 'Efficiency and Internal Organization: Works Council in West German Firms', *Economica*, vol. 54, no. 216, February.

Fleurbaey, M. (1993), 'Economic Democracy and Equality: A Proposal', in Bardhan and Roemer (eds) (1993a).

Foss, N.J. (1993), 'Notes on the Socialist Calculation Debate', *Rivista internazionale di scienze sociali*, vol. 101, April–June.

Frank, J. et al. (1988), 'Means of Payment in Takeover: Results for the UK and the US', in Auerbach (ed.) (1988).

Frantz, R. (1988), *X-Efficiency: Theory, Evidence and Applications*, Kluwer Academic Publishers, Boston.

Franzini, M. and Messori, M. (eds) (1991), *Impresa, istituzioni e informazione (Enterprises, Institutions and Information)*, CLUEB, Bologna.

Friss, I. (ed.) (1969), *Reform of the Economic Mechanism in Hungary*, Akadémiai Kiadó, Budapest.

Fromm, E. (1961), *Marx's Concept of Man*, Frederick Ungar, New York.

Fromm, E. (1976), *To Have or to Be?*, Harper & Row Publishers, New York.

Fuà, G. (1993), *Crescita economica (Economic Development)*, Il Mulino, Bologna.

Fuà, G. (1994), 'Crescita, benessere e compiti dell'economia politica' (Growth, welfare and the tasks of political economy), *Il Mulino*, no. 5, September–October.

Furubotn, E.G. (1971), 'Toward a Dynamic Model of the Yugoslav Firm', *Canadian Journal of Economics*, vol. 4, no. 2.

Furubotn, E.G. (1974), 'Bank Credit and Labor-managed Firms – The Yugoslav Case', in Furubotn and Pejovich (eds) (1974).

Furubotn, E.G. (1976), 'The Long-run Analysis of the Labor-managed Firm: An Alternative Interpretation', *American Economic Review*, vol. 66, no. 1.

Furubotn, E.G. (1978), 'The Long-run Analysis of the Labor-managed Firm: Reply', *American Economic Review*, vol. 68, no. 4.

Furubotn, E.G. (1979), 'Decision-Making Under Management: The Commitment Mechanism Reconsidered', *Zeitschrift für die Gesamte Staatswissenschaft*, vol. 135, no. 2.

Furubotn, E.G. (1980a), 'The Socialist Labor-managed Firm and Bank-financed Investment: Some Theoretical Issues', *Journal of Comparative Economics*, vol. 4, no. 2.

Furubotn, E.G. (1980b), 'Bank Credit and the Labor-managed Firm: Reply', *American Economic Review*, vol. 70, no. 4.

Furubotn, E.G. (1985), 'Codetermination, Productivity Gains, and the Economics of the Firm', *Oxford Economic Papers*, vol. 37, no. 1.

Furubotn, E.G. and Pejovich, S. (1970a), 'Tax Policy and Investment Decisions of the Yugoslav Firm', *National Tax Journal*, vol. 23, no. 3.

Furubotn, E.G. and Pejovich, S. (1970b), 'Property Rights and the Behavior of the Firm in a Socialist State: The Example of Yugoslavia', *Zeitschrift für Nationalökonomie*, vol. 30, no. 5.

Furubotn, E.G. and Pejovich, S. (1972), 'Property Rights and Economic Theory: A Survey of Recent Literature', *Journal of Economic Literature*, vol. 10, no. 4.

Furubotn, E.G. and Pejovich, S. (1973), 'Property Rights, Economic Decentralization and the Evolution of the Yugoslav Firm 1965–72', *Journal of Law and Economics*, vol. 16, no. 2, October.

Furubotn, E.G. and Pejovich, S. (eds) (1974), *The Economics of Property Rights*, Ballinger, Cambridge, Mass.

Gadò, O. (ed.) (1972), *Reform of the Economic Mechanism in Hungary*, Akadémiai Kiadó, Budapest.

Gallagher, W.E. and Einhorn C.D. (1976), 'Motivation Theory and Job Design', *Journal of Business*, vol. 49, July.

Gallaway, L. and Shukla, V. (1974), 'The Neoclassical Production Function', *American Economic Review*, vol. 64, June.

Garegnani, P. (1960), *Il capitale nelle teorie della distribuzione* (*Capital in Distribution Theory*), Giuffré, Milan.

Garegnani, P. (1970), 'Heterogeneous Capital, the Production Function and the Theory of Distribution', *Review of Economic Studies*, vol. 37, July.

Garegnani, P. (1976), 'On a Change in the Notion of Equilibrium in Recent Work on Value: A Comment on Samuelson', in Brown, Sato and Zarenka (eds) (1976).

Garegnani, P. (1981), *Marx e gli economisti classici* (*Marx and the Classical Economist*), Einaudi, Turin.

Garegnani, P. (1984), 'Value and Distribution in the Classical Economists and Marx', *Oxford Economic Papers*, vol. 36, no. 2, June.

Giannola, A. (1989a), 'La teoria dell'impresa autogestita' (The Theory of the Labour-managed Firm), *Politica ed Economia*, vol. 20, no. 2.

Giannola, A. (1989b), 'Teoria economica dell'autogestione e comportamento dell'impresa nel breve periodo' (Economic Theory of Labour-management and the Short-run Behaviour of Firms), in Jossa (ed.) (1989a).

Gooding, J. (1990), 'Gorbachev and Democracy', *Soviet Studies*, vol. 42, no. 2.

Graaf, I. de V. (1957), *Theoretical Welfare Economics*, Cambridge University Press, Cambridge.

Gramsci, A. (1919–20), *L'ordine nuovo: 1919–1920* (*The New Order: 1919–1920*), reprinted Einaudi, Turin, 1972.

Gramsci, A. (1975), *Quaderni del carcere* (*Letters from Prison*), ed. by V. Gerratana, 4 vols, Einaudi, Turin.

Gramsci, A. (1994), *Scritti di economia politica* (*Writings on Political Economy*), ed. by F. Consiglio and F. Frosini, Boringhieri, Turin.

Gray, J. (1984), *Hayek on Liberty*, Basil Blackwell, London.

Gray, J. (1989), 'Hayek on the Market Economy and the Limits of State Action', in Helm (ed.) (1989a).

Graziani, A. (1984), 'Moneta senza crisi' (Money without Crises), *Studi economici*, vol. 39, no. 24.

Grossman, S.J. and Hart, O.D. (1980), 'Takeover-bids, the Free-rider Problem and the Theory of Corporation', *Bell Journal of Economics*, vol. 11, no. 1.

Grossman, S.J. and Hart, O.D. (1982), 'Corporate Financial Structure and Management Incentives', in McCall (ed.) (1982).

Grossman, S.J. and Hart, O.D. (1986), 'The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration', *Journal of Political Economy*, vol. 94, no. 4, August.

Grunberg, L. (1991), 'The Plywood Cooperatives: Some Disturbing Findings', in Russel and Rus (eds) (1991).

Gui, B. (1982), 'Imprese gestite dal lavoro e diritti patrimoniali dei membri: una trattazione economica' (Property-rights in Labour-managed Firms: An Economic Analysis), *Ricerche economiche*, vol. 36, no. 3, July–September.

Gui, B. (1983), 'La teoria economica delle cooperative di produzione: un commento a Jossa' (The Economic Theory of Producer Cooperatives: A Comment to Jossa), *Rivista della cooperazione*, vol. 20, October–December.

Gui, B. (1984), 'Il "lavoro imprenditore": motivazioni ed effetti di ordine economico' ("The Worker-entrepreneur": Motivation and Economic Effects), *Rivista della Cooperazione*, vol. 21, October–December.

Gui, B. (1985), 'Limits to External Financing: A Model and an Application to Labor-Managed Firms', in Jones and Svejnar (eds) (1985a).

Gui, B. (1993), 'The Chances for Success of Worker-Managed Firm Organization: An Overview', in AISSEC (1993).

Guidi, V. (1987), 'La teoria dei contratti impliciti: una rassegna critica' (The Theory of Implicit Contracts: A Critical Review), *Economia politica*, vol. 4, no. 1, April.

Gustafsson, B. (1993), 'Preface', in Bowles, Gintis and Gustafsson (eds) (1993).

Hahn, F.H. (1973), 'The Winter of our Discontent', *Economica*, vol. 40, August.

Hahn, F.H. (1993a), 'Il futuro del capitalismo: segni premonitori' (The Future of Capitalism: Forewarnings), *Rivista milanese di economia*, no. 46, April–June.

Hahn, F.H. (1993b), 'James Meade and Benevolence', in Atkinson (ed.) (1993).

Hahnel, R. and Albert, M. (1990), *Quiet Revolution in Welfare Economics*, Princeton University Press, Princeton, NJ.

Hall, R.L. (1937), *The Economic System in a Socialist State*, St. Martins Press, London.

Halm, G. (1926), *Ist der Sozialismus wirtschaftlich möglich?* (*Can Socialism Work in Economic Terms?*), Robert Engelmann, Berlin.

Halm, G. (1935), 'Further Considerations on the Possibility of Adequate Calculation in a Socialist Community', in Hayek (ed.) (1935a).

Halm, G. (1968), *Economic Systems: A Comparative Analysis*, 3rd edn, Holt, Rinehart & Winston, New York.

Harberger, A.C. (1954), 'Monopoly and Resource Allocation', *American Economic Review*, vol. 44, May.

Harcourt, B.C. (ed.) (1985), *Keynes and His Contemporaries*, Macmillan, London.

Hare, P., Radice, H. and Swain, N. (eds) (1981), *Hungary: A Decade of Economic Reform*, Allen & Unwin, London.

Hart, O. (1983), 'Optimal Labor Contracts Under Asymmetric Information: An Introduction', *Review of Economic Studies*, vol. 50, January.

Hart, O. (1989), 'An Economist's Perspective on the Theory of the Firm', *Columbia Law Review*, vol. 89, no. 1.

Hart, O. and Holmström, B. (1986), 'The Theory of Contracts', in Bewley (ed.) (1986).

Hart, O. and Moore, J. (1990), 'Property Rights and the Nature of the Firm', *Journal of Political Economy*, vol. 98, no. 6.

Hausman, D.M. (ed.) (1994), *The Philosophy of Economics: An Anthology*, 2nd edn, Cambridge University Press, Cambridge.

Hayek, F.A. (1933), 'The Trend of Economic Thinking', *Economica*, vol. 40, no. 3.

Hayek, F.A. (ed.) (1935a), *Collectivist Economic Planning*, Routledge, London.

Hayek, F.A. (1935b), 'The Nature and History of the Problem', in Hayek (ed.) (1935a).

Hayek, F.A. (1935c), 'The Present State of Debate', in Hayek (ed.) (1935a).

Hayek, F.A. (1937), 'Economics and Knowledge', *Economica*, n.s., vol. 3, reprinted in Hayek (1948a).

Hayek, F.A. (1940), 'Socialist Calculation III: The Competitive Solution', reprinted in Hayek (1948a).

Hayek, F.A. (1942–44), 'Scientism and the Study of the Society', *Economica*, n.s., nos 37 and 41, reprinted in Hayek (1952 and 1979).

Hayek, F.A. (1944), *The Road to Serfdom*, Routledge, London.

Hayek, F.A. (1945a), 'The Use of Knowledge in Society', *American Economic Review*, vol. 35, September, reprinted in Hayek (1948a).

Hayek, F.A. (1945b), 'The Price System as a Mechanism for Using Knowledge', *American Economic Review*, vol. 35, September.

Hayek, F.A. (1946), 'Individualism: True and False', reprinted in Hayek (1948a).

Hayek, F.A. (1948a), *Individualism and Economic Order*, University of Chicago Press, Chicago.

Hayek, F.A. (1948b), 'The Meaning of Competition', reprinted in Hayek (1948a).

Hayek, F.A. (1949), 'The Intellectuals and Socialism', reprinted in Hayek (1967).

Hayek, F.A. (1952 and 1979), *The Counter-Revolution of Science – Studies on the Abuse of Reason*, 2nd edn, Liberty Press, Indianapolis.

Hayek, F.A. (1964), 'The Theory of Complex Phenomena', reprinted in Hayek (1967).

Hayek, F.A. (1967), *Studies in Philosophy, Politics and Economics*, Routledge & Kegan Paul, London and Chicago.

Hayek, F.A. (1973a), *Law, Legislation and Liberty*, vol. I: *Rules and Order*, University of Chicago Press, Chicago.

Hayek, F.A. (1973b), 'Liberalism', reprinted in Hayek (1978).

Hayek, F.A. (1973c), 'The Place of Menger's Grundsätze in the History of Economic Thought', reprinted in Hayek (1978).

Hayek, F.A. (1973d), *Economic Freedom and Representative Government*, Institute of Economic Affairs, London.

Hayek, F.A. (1976a), 'Socialism and Science', reprinted in Hayek (1978).

Hayek, F.A. (1976b), *Law, Legislation and Liberty*, vol. II: *The Mirage of Social Justice*, University of Chicago Press, Chicago.

Hayek, F.A. (1978), *New Studies in Philosophy, Politics and the History of Ideas*, Routledge & Kegan, London.

Hayek, F.A. (1979), *Law, Legislation and Liberty*, vol. III, *The Political Order of a Free People*, University of Chicago Press, Chicago.

Hayek, F.A. (1981), 'Foreword', in Mises (1932).

Hayek, F.A. (1988a), *The Fatal Conceit: The Errors of Socialism*, Routledge & Kegan, London.

Hayek, F.A. (1988b), *Conoscenza, mercato, pianificazione* (*Knowledge, Market, Planning*), ed. by F. Donzelli, Il Mulino, Bologna.

Hayek, F.A. (1994), *Hayek on Hayek: An Autobiographical Dialogue*, ed. by S. Kresge and L. Wenar, Routledge, London.

Heal, G. (1973), *The Theory of Economic Planning*, North-Holland, Amsterdam.

Hegedüs, A. (1979), *Le alternative dello sviluppo socialista* (*The Alternatives of Socialist Evolution*), Ital. transl. from Hungarian by B. Dallago, De Donato, Bari, 1979.

Heimann, E. (1932), *Sozialistiche Wirtschafts und Arbeitsordnung (The Organization of Labour in Socialist Economies)*, Robert Engelmann, Berlin.

Helm, D. (ed.) (1989a), *The Economic Borders of the State*, Oxford University Press, Oxford.

Helm, D. (1989b), 'The Economic Borders of the State', in Helm (ed.) (1989a).

Hey, J.D. and Suckling, J. (1980), 'On the Theory of the Competitive Labor-managed Firm under Price Uncertainty', *Journal of Comparative Economics*, vol. 4, no. 3.

Hirsch, F. (1977), *Social Limits to Growth*, Twentieth Century Fund, London.

Hirschman, A.O. (1982), *Exit, Voice and Loyalty*, Harvard University Press, Cambridge, Mass.

Hirschman, A.O. (1994), 'I conflitti come pilastri della società democratica' (Conflict as the pillar of democratic society), *Stato e mercato*, no. 2, August.

Hodgson, G.M. (1982–83), 'Worker Participation and Macroeconomic Efficiency', *Journal of Post-Keynesian Economics*, vol. 5, no. 2.

Hodgson, G.M. (1987), 'Economic Pluralism and Self-Management', in Jones and Svejnar (eds) (1987).

Hodgson, G.M. (1993), 'Transaction Costs and the Evolution of the Firm', in Pitelis (ed.) (1993).

Hoff, T.J.B. (ed.) (1938), *Economic Calculation in the Socialist Society*, Eng. transl., Liberty Press, Indianapolis, 1981.

Holländer, H. (1982), 'Class Antagonism, Exploitation and the Labour Theory of Value', *Economic Journal*, vol. 92, December.

Holmström, B. (1979), 'Moral Hazard and Observability', *Bell Journal of Economics*, vol. 10, no. 1.

Holmström, B. (1982), 'Moral Hazard in Teams', *Bell Journal of Economics*, vol. 13, no. 2.

Hornstein, Z., Grice, J. and Webb, A. (eds) (1979), *The Economics of the Labor Market*, HMSO, London.

Horvat, B. (1964), *Towards a Theory of Planned Economy*, Yugoslav Institute of Economic Research, Belgrade.

Horvat, B. (1967), 'A Contribution to the Theory of the Yugoslav Firm', *Economic Analysis and Workers' Management*, vol. 1, no. 1–2.

Horvat, B. (1972), 'Critical Notes on the Theory of the Labour-managed Firm and Some Macroeconomic Implications', *Economic Analysis and Workers' Management*, vol. 6.

Horvat, B. (1976), *The Yugoslav Economic System*, M.E. Sharpe, New York.

Horvat, B. (1982), *The Political Economy of Socialism*, M.E. Sharpe, New York.

Horvat, B. (1986), 'The Theory of the Worker-managed Firm Revisited', *Journal of Comparative Economics*, vol. 10, no. 1.

Horvat, B. (1990), 'Socialism as a Socio-economic System', reprinted in Nove and Thatcher (eds) (1994).

Horvat, B. (1991), 'Social Ownership', in Russel and Rus (eds) (1991).

Huerta de Soto, J. (1995), 'Entrepreneurship and the Economic Analysis of Socialism', in Meijer (ed.) (1995).

Hughes, A. (1989), 'Mergers and Economic Performance in the UK: A Survey of the Empirical Evidence, 1950–1980', in Fairburn and Kay (eds) (1989).

Infantino, L. (1978), 'Mercato socialista e autogestione' (Socialist markets and labour management), *Mondoperaio*, no. 13, June.

International Cooperative Alliance (1967), *Report of the ICA Commission on Co-operative Principles*, Leicester Printers Ltd., London.

International Cooperative Alliance (1984), *ICA Model By-laws for a Worker Cooperative: Version II*, Leicester Printers Ltd., London.

Ioannides, S. (1992), *The Market, Competition and Democracy; a Critique of Neo-Austrian Economics*, Edward Elgar, Aldershot.

Ireland, N.J. and Law, P.J. (1981), 'Efficiency, Incentives, and Individual Labor Supply in the Labor-managed Firm', *Journal of Comparative Economics*, vol. 5, no. 1.

Ireland, N.J. and Law, P.J. (1982), *The Economics of Labour-managed Enterprises*, Croom Helm, London.

Jackall, R. and Levin, H.M. (eds) (1984), *Worker Cooperatives in America*, University of California Press, Berkeley.

Jansson, S. and Hellmark, A. (eds) (1986), *Labor-Owned Firms and Workers' Cooperatives*, Gower, Aldershot, Hants, UK.

Jay, P. (1980), 'The Workers' Cooperative Economy', in Clayre (ed.) (1980).

Jensen, M.C. (1989), 'Eclipse of the Public Corporation', *Harvard Business Review*, vol. 89, no. 5.

Jensen, M.C. and Meckling, W.J. (1976), 'Theory of the Firm: Managerial Behavior, Agency and Ownership Structure', *Journal of Financial Economics*, vol. 3, no. 4, October.

Jensen, M.C. and Meckling, W.J. (1979), 'Rights and Production Functions: An Application to Labor-Managed Firms and Codetermination', *Journal of Business*, vol. 52, no. 4.

Jones, D.C. (1975), 'British Producer Cooperatives and the Views of the Webbs on Participation and Ability to Survive', *Annals of Public and Cooperative Economy*, vol. 46.

Jones, D.C. (1979), 'U.S. Producer Cooperatives: The Record to Date', *Industrial Relations*, vol. 18, no. 3.

Jones, D.C. (1987), 'The Productivity Effects of Direct and Financial Participation by Employees in the Firm', *Industrial and Labor Relations Review*, no. 41.

Jones, D.C. and Backus, D.K. (1977), 'British Producer Cooperatives in the Footwear Industry: An Empirical Test of the Theory of Financing', *Economic Journal*, vol. 87, September.

Jones, D.C. and Pliskin, J. (1991), 'The Effects of Worker Participation, Employee Ownership and Profit Sharing on Economic Performance', reprinted in Russel and Russel (eds) (1991).

Jones, D.C. and Svejnar, J. (eds) (1982), *Participatory and Self-Managed Firms: Evaluating Economic Performance*, Heath, Lexington.

Jones, D.C. and Svejnar, J. (eds) (1985a), *Advances in the Economic Analysis of Participatory and Labor-Managed Firms*, vol. I, JAI Press, Greenwich, CT.

Jones, D.C. and Svejnar, J. (1985b), 'Participation, Profit Sharing, Worker Ownership and Efficiency in Italian Producer Cooperatives', *Economica*, vol. 52.

Jones, D.C. and Svejnar, J. (eds) (1987), *Advances in the Economic Analysis of Participatory and Labor-Managed Firms*, vol. II, JAI Press, Greenwich, CT.

Jones, D.C. and Svejnar, J. (eds) (1988), *Advances in the Economic Analysis of Participatory and Labor-Managed Firms*, vol. III, JAI Press, Greenwich, CT.

Jones, D.C. and Svejnar, J. (eds) (1992), *Advances in the Economic Analysis of Participatory and Labor Managed Firms*, vol. IV, JAI Press, Greenwich, CT.

Jones, D.C. and Svejnar, J. (eds) (1995), *Advances in the Economic Analysis of Participatory and Labor Managed Firms*, vol. V, JAI Press, Greenwich, CT.

Jossa, B. (1978), *Socialismo e mercato* (*Socialism and the Market*), Etas Libri, Milan.

Jossa, B. (1983), 'Il Marx dei neoricardiani e la teoria dello sfruttamento' (The Neo-Ricardian View of Marx and the Theory of Exploitation), *Note economiche*, vol. 13, no. 3.

Jossa, B. (1985), 'Due opinioni sulla teoria dell'impresa cooperativa; con una conclusione sulla definizione del socialismo' (Two Opinions on the Theory of the Cooperative Firm, with a Conclusion on the Definition of Socialism), *Rivista internazionale di scienze sociali*, vol. 93, January–March.

Jossa, B. (1986), 'Considerazioni su di un "tipo ideale" di cooperative di produzione' (Reflections on an 'Ideal Type' of Producer Cooperative), *Studi economici*, vol. 41, no. 28.

Jossa, B. (1988a), 'Sul problema del sottoinvestimento delle imprese gestite dai lavoratori' (On the Issue of Underinvestment in Worker-managed Firms), Atti del V Convegno Scientifico Annuale dell'Associazione Italiana per lo Studio dei Sistemi Economici Comparati (Proceedings of the 5th Annual Scientific Conference of the Italian Association for the Comparative Study of Economic Systems) , Pavia, 14–16 September.

Jossa, B. (1988b), 'Sulla proposta di un percorso parallelo dell'impresa cooperativa e di quella capitalistica' (On the Proposal for a Parallel Development of Cooperative Firms and Capitalist Firms), in CESPE (1988).

Jossa, B. (ed.) (1988c), *Autogestione, cooperazione e partecipazione agli utili* (*Labour Management, Cooperation and Profit-sharing*), Il Mulino, Bologna.

Jossa, B. (1988d), 'Teoria economica e cooperative di produzione' (Economic Theory and Producer Cooperatives), in Jossa (ed.) (1988c).

Jossa, B. (ed.) (1989a), *Teoria dei sistemi economici* (*The Theory of Economic Systems*), Utet, Turin.

Jossa, B. (1989b), 'Socialismo e autogestione' (Socialism and Labour Management), in Jossa (ed.) (1989a).

Jossa, B. (1989c), 'Sulla teoria del valore e la natura del profitto' (On Value Theory and the Nature of Profit), in Pasinetti (ed.) (1989).

Jossa, B. (1990a), 'Sulla transizione dall'economia di comando al socialismo di mercato' (On the Transition from Command Economy to Market Socialism), *Note economiche*, vol. 20, no. 2.

Jossa, B. (1990b), 'Egoismo, altruismo e teoria economica' (Egotism, Altruism and Economic Theory), in Cipriani (ed.) (1990).

Jossa, B. (1991a), 'Keynes and Lange on Public Enterprise', *Contributions to Political Economy*, vol. 10.

Jossa, B. (1991b), 'Marshall e il fondamento sociale del carattere' (Marshall and the Social Basis of Character), *Mezzogiorno d'Europa*, vol. 11, no. 3–4, July–December.

Jossa, B. (1991c), 'Is there an Option to the Denationalisation of Eastern European Enterprises?', *Rivista di politica economica*, vol. 81, no. 12, reprinted in Baldassarri, Paganetto and Phelps (eds) (1993).

Jossa, B. (1991d), 'La cooperazione e il fondamento sociale del carattere' (Cooperation and the Social Basis of Character), in AISSEC (1993), mimeo.

Jossa, B. (1991e), 'The Theory of Exploitation in Marx', in Caravale (ed.) (1991).

Jossa, B. (1991f), 'Un classico, nonostante tutto' (A Classic, Nevertheless), *Il Ponte*, no. 10, reprinted in Sylos Labini (ed.) (1994).

Jossa, B. (1992), 'Socialismo di mercato e distribuzione del reddito' (Market Socialism and Income Distribution), in Chilosi (ed.) (1992).

Jossa, B. (1993), 'Ordine spontaneo e liberismo secondo Hayek' (Spontaneous Order and Liberalism in Hayek's View), *Studi economici*, no. 49.

Jossa, B. (1994a), 'L'autogestione dell'impresa' (The Labour-managed Firm), in Colombo (ed.) (1994).

Jossa, B. (1994b), 'Hayek and Market Socialism', in Colonna, Hagemann and Hamouda (eds) (1994).

Jossa, B. and Casavola, P. (1993), 'The Problem of Under-Investment in Firms Managed by Workers', in Atkinson (ed.) (1993).

Kahneman, D., Slovic, P. and Tversky, A. (1983), *Judgement Under Uncertainty: Heuristics and Biases*, Cambridge University Press, Cambridge.

Kaldor, N. (1932), Review of C. Landauer, 'Planwirtschaft und Verkehrswirtschaft' (Planned Economy and Exchange Economy), *Economic Journal*, vol. 42, June.

Kaldor, N. (1972), 'The Irrelevance of Equilibrium Economics', *Economic Journal*, vol. 82, December.

Kalecki, M. (1943), 'Political Aspects of Full Employment', reprinted in Kalecki (ed.) (1971).

Kalecki, M. (1971), *Selected Essays on the Dynamics of the Capitalist Economy: 1933–1970*, Cambridge University Press, Cambridge.

Kantorovic, L.V. (1965), *The Best Use of Economic Resources*, Pergamon Press, Oxford.

Katz, A. (1988), 'The Viability of Labor-Managed Firms with Cournot–Nash Workers in a Mixed Economy with Profit-Maximizing Firms', in Jones and Svejnar (eds) (1988).

Kautsky, K. (1901), *Das Erfurter Programm in seinen grundsätzlichen Theil erläutert von Karl Kautsky* (*The Essential Part of the Erfurt Program, Illustrated by Karl Kautsky*), 8th edn, Dietz, Stuttgart, 1907.

Kautsky, K. (1971), *Il programma di Erfurt* (*The Erfurt Program*), Ital. transl., Samonà e Savelli, Rome.

Keizer, W. (1989), 'Recent Reinterpretations of the Socialist Calculation Debate', *Journal of Economic Studies*, vol. 16, no. 2.

Keynes, J.M. (1924), 'Alfred Marshall', reprinted in Keynes (1982a).

Keynes, J.M. (1925), 'Am I a Liberal?', reprinted in Keynes (1931).

Keynes, J.M. (1926), 'The End of Laissez-faire', reprinted in Keynes (1931).

Keynes, J.M. (1927), 'The Public and the Private Concern', *Manchester Guardian*, 1st August, reprinted in Keynes (1981).

Keynes, J.M. (1930), 'Economic Possibilities for our Grandchildren', reprinted in Keynes (1931).

Keynes (1931), *Essays in Persuasion*, reprinted in *The Collected Writings of John Maynard Keynes*, vol. IX , Macmillan, London, 1972.

Keynes, J.M. (1932), 'State Planning', reprinted in Keynes (1982b).

Keynes, J.M. (1933), 'The Distinction between a Cooperative Economy and an Entrepreneur Economy', reprinted in Keynes (1979).

Keynes, J.M. (1936), *The General Theory of Employment, Interest and Money*, Macmillan, London.

Keynes, J.M. (1979), *The Collected Writings of J.M. Keynes*, vol. XXIX: *The General Theory and After: A Supplement*, Macmillan, London.

Keynes, J.M. (1981), *The Collected Writings of John Maynard Keynes*, vol. XIX: *Activities: Return to Gold and Industrial Policy*, Part II, Macmillan, London.

Keynes, J.M. (1982a), *The Collected Writings of John Maynard Keynes*, vol. X: *Essays in Biography*, Macmillan, London.

Keynes, J.M. (1982b), *The Collected Writings of John Maynard Keynes*, vol. XXI: *Activities 1931–39: World Crises and Policies in Britain and America*, Macmillan, London.

Klein, B. (1991), 'Vertical Integration as Organizational Ownership: The Fisher Body–General Motors Relationship Revisited', in Williamson and Winter (eds) (1991).

Klein, B., Crawford, R.G. and Alchian, A.A. (1978), 'Vertical Integration, Appropriate Rents, and the Competitive Contracting Process', *Journal of Law and Economics*, vol. 21, no. 2.

Knight, F.H. (1921), *Risk, Uncertainty and Profit*, London School of Economics and Political Science, London.

Koopmans, T.C. (1957), *Three Essays on the State of Economic Science*, McGraw-Hill, New York.

Koopmans, T.C. (1974), 'Is the Theory of Competitive Equilibrium with it?', *American Economic Review*, vol. 64, May.

Koplin, H.T. (1963), 'The Profit Maximization Assumption', *Oxford Economic Papers*, vol. 15, June.

Kornai, J. (1971), *Anti-Equilibrium*, North-Holland, Amsterdam.

Kornai, J. (1979), 'Resource-Constrained versus Demand-Constrained Systems', *Econometrica*, vol. 47, no. 4, July.

Kornai, J. (1980a), *The Economics of Shortage*, North-Holland, Amsterdam.

Kornai, J. (1980b), 'The Dilemmas of a Socialist Economy: The Hungarian Experience', *Cambridge Journal of Economics*, vol. 4, no. 2, June.

Kornai, J. (1986), 'The Hungarian Reform Process: Visions, Hopes and Reality', *Journal of Economic Literature*, vol. 24, December.

Kornai, J. (1992), *The Socialist System: The Political Economy of Communism*, Clarendon Press, Oxford.

Kornai, J. (1993), 'Market Socialism Revisited', in Bardhan and Roemer (eds) (1993a).

Korsch, K. (1934–39), 'Briefe an Paul Partos, Paul Mattick und Bert Brecht' (Letters to Paul Partos, Paul Mattick and Bert Brecht), ed. by M. Buchmiller and Götz Langheu, in *Jahrbuch Arbeiterbewegung*, Band 2, Fischer Taschebuch Verlag, Frankfurt, 1974.

Kowalik, T. (1987), 'Oskar Lange's Lectures on the Economic Operation of a Socialist Society', *Contributions to Political Economy*, vol. 6, March.
Kowalik, T. (1994), 'Introduction', in Lange (1994).
Kukathas, C. (1989), *Hayek and Modern Liberalism*, Clarendon Press, Oxford.
Kurz, H. and Salvadori, N. (1995), *Theory of Production*, Cambridge University Press, Cambridge.
Lachmann, L.M. (1969), 'Methodological Individualism and the Market Economy', in Streissler (1969), reprinted in Lachmann (ed.) (1977).
Lachmann, L.M. (ed.) (1977), *Capital, Expectations and the Market Process. Essays on the Theory of Market Economy*, Sheed Andrews & McMeel, Kansas City.
La Grassa, G. (ed.) (1994a), *Saggi di critica dell'economia politica (Critical Essays on Political Economy)*, Vangelista, Milan.
La Grassa, G. (1994b), 'Punti irrinunciabili del marxismo' (Unrenounceable Points in Marxism), in La Grassa (ed.) (1994a).
La Grassa, G. (1994c), 'Capitalismo e modo di produzione capitalistico' (Capitalism and the Capitalist Production Mode), in La Grassa (ed.) (1994a).
La Malfa, G. (1994), 'Una nota sulla filosofia sociale di Keynes' (A Note on Keynes's Social Philosophy), *Moneta e credito*, vol. 47, no. 185, March.
Landauer, C.A. (1959), *European Socialism: A History of Ideas and Movements*, University of California Press, Berkeley and Los Angeles.
Lange, O. (1935), 'Marxian Economics and Modern Economic Theory', *Review of Economic Studies*, vol. 2, no. 3, June.
Lange, O. (1936), 'On the Economic Theory of Socialism', *Review of Economic Studies*, vol. 4, no. 1.
Lange, O. (1936–37), 'On the Economic Theory of Socialism', *Review of Economic Studies*, vol. 4, nos 1 and 2, October and February, reprinted with changes in Lippincott (ed.) (1938a).
Lange, O. (1937), 'Mr. Lerner's Note on Socialist Economics', *Review of Economic Studies*, vol. 4, no. 2, February.
Lange, O. (1940), 'Letter to Hayek (31 July)', in Lange (1994).
Lange, O. (1942), 'The Economic Operation of a Socialist Society', first published in *Contributions to Political Economy*, vol. 6, March 1987.
Lange, O. (1947), 'The Practice of Economic Planning and Optimum Allocation of Resources', reprinted in Lange (1994).
Lange, O. (1956), 'How I see the Polish Economic Model', reprinted in Lange (1970).
Lange, O. (1957), 'Political Economy of Socialism', reprinted in Lange (1962b), reprinted in Lange (1994).
Lange, O. (1958a), 'Fundamentals of Economic Planning', reprinted in Lange (1960).

Lange, O. (1958b), *Political Economy*, vol. I, Eng. transl., Pergamon Press, Oxford, 1963.
Lange, O. (1960), *Essays on Economic Planning*, Asia Publishing House, Calcutta.
Lange, O. (1962a), 'The Economist's Case for Socialism', in Lange (1962b).
Lange, O. (1962b), *Problems of Political Economy of Socialism*, Institute of Social Studies, The Hague.
Lange, O. (1964), *Entwicklungstendenzen der modernen Wirtschaft und Gesellschaft (Trends in the Growth of Modern Economy and Society)*, Europa Verlag, Vienna.
Lange, O. (1967), 'The Computer and the Market', in Feinstein (ed.) (1967).
Lange, O. (1968), *Political Economy*, vol. II, Eng. transl., Pergamon Press, Oxford, 1971.
Lange, O. (1970), *Papers in Economics and Sociology*, Eng. transl., Pergamon Press, Oxford, 1970.
Lange, O. (1994), *Economic Theory and Market Socialism: Selected Essays of Oskar Lange*, ed. by T. Kowalik, Edward Elgar, Aldershot.
Lasserre, G. (1975), 'L'autogestion, ses doctrines en France, ses problèmes économiques' (Self-management, its Doctrines in France, its Economic Problems), *Revue des études cooperatives* , vol. 191, no. 1.
Lavoie, D. (1985), *Rivalry and Central Planning: The Socialist Calculation Debate Reconsidered*, Cambridge University Press, Cambridge.
Lavoie, D. (1986), 'The Market as a Procedure for Discovery and Conveyance of Inarticulate Knowledge', reprinted in Wood and Woods (eds) (1991), vol. IV.
Lavoie, D. (1990), 'Computation, Incentives, and Discovery: The Cognitive Function of Market Socialism', *Annals of the American Academy of Political and Social Science*, vol. 57, January.
Law, P.J. (1977), 'The Illyrian Firm and Fellner's Union–Management Model', *Journal of Economic Studies*, vol. 4, no. 1.
Lazear, E.P. (1987), 'Incentive Contracts', in Eatwell, Milgate and Newman (eds) (1987).
Le Grand, J. and Estrin, S. (eds) (1989), *Market Socialism*, Clarendon Press, Oxford.
Leeman, W.A. (ed.) (1963), *Capitalism, Market Socialism and Central Planning*, Houghton Mifflin, Boston.
Leete-Guy, F. (1991), 'Federal Structure and the Viability of Labour-Managed Firms in Mixed Economies', in Russel and Rus (eds) (1991).
Leibenstein, H. (1966), 'Allocative Efficiency vs "X Efficiency"', *American Economic Review*, vol. 56, June.
Lerner, A.P. (1934), 'Economic Theory and Socialist Economy', *Review of Economic Studies*, vol. 2, no. 1, October.

Lerner, A.P. (1936), 'A Note on Socialist Economics', *Review of Economic Studies*, vol. 4, no. 1, October.
Lerner, A.P. (1937), 'Statics and Dynamics in Socialist Economics', *Economic Journal*, vol. 47, June.
Lerner, A.P. (1938), 'Theory and Practice in Socialist Economics', *Review of Economic Studies*, vol. 6, no. 1, October.
Lerner, A.P. (1944), *The Economics of Control*, Macmillan, New York.
Lerner, A.P. (1977), 'Marginal Cost Pricing in the 1930's', *American Economic Review*, vol. 67, February.
Levin, H.M. (1984), 'Employment and Productivity of Producer Cooperatives', in Jackall and Levin (eds) (1984).
Levine, A. (1988), *Arguing for Socialism:Theoretical Considerations*, rev. edn, Verso, London.
Levine, D.J. and Tyson, L. (1990), 'Participation, Productivity and the Firm's Environment', in Blinder (ed.) (1990).
Liechtenstein, P.M. (1984), 'Economic Democracy: The Rawls–Vanek–Sraffa Connection', *Review of Social Economy*, vol. 42, no. 2, October.
Liechtenstein, P.M. (1988), 'Toward a Classical Reconstruction of the Economic Theory of Self-Management', in Jones and Svejnar (eds) (1988).
Lippi, M. (1974), 'Lavoro produttivo, costo sociale reale e sostanza del valore nel Capitale' (Productive Work, Actual Social Cost and the Essence of Value in Capital), *Problemi del Socialismo*, nos 21–22.
Lippi, M. (1976), *Marx. Il valore come costo sociale reale* (*Marx, Value as an Actual Social Cost*), Etas Libri, Milan.
Lippincott, B.E. (ed.) (1938a), *On the Economic Theory of Socialism*, University of Minnesota Press, Minneapolis.
Lippincott, B.E. (1938b), 'Introduction' in Lippincott (ed.) (1938a).
Little, I.M.D. (1957), *A Critique of Welfare Economics*, 2nd edn, Clarendon Press, Oxford.
Lukes, S. (1973), *Individualism*, Basil Blackwell, Clarendon Press, Oxford.
Lunghini, G. (ed.) (1971), *Valore, prezzi e equilibrio generale* (*Value, Prices and General Equilibrium*), Il Mulino, Bologna.
Lunghini, G. (ed.) (1991), *Adam Smith. La ricchezza delle nazioni. Abbozzo* (*Adam Smith. TheWealth of Nations. A Draft*), Editori Riuniti, Rome.
Lunghini, G. (1994), 'Gramsci critico dell'economia politica' (Gramsci as a Critic of Political Economy), introduction in Gramsci (1994).
Lunghini, G. (1995), *L'età dello spreco* (*The Age of Wastage*), Bollati Boringhieri, Turin.
Macchioro, A. (1946), 'Il problema dei consigli di gestione' (The Problem of Workers' Councils), reprinted in Macchioro (1970).
Macchioro, A. (1970), *Studi di storia del pensiero economico* (*Studies in the History of Economic Thought*), Feltrinelli, Milan.

Machlup, F. (1967), 'The Theories of Firm: Marginalist, Behavioral, Managerial', *American Economic Review*, vol. 57, March.
Makowski, L. and Ostroy, J.M. (1993), 'General Equilibrium and Market Socialism: Clarifying the Logic of Competitive Markets', in Bardhan and Roemer (eds) (1993a).
Malinvaud, E. (1982), 'Wages and Employment', *Economic Journal*, vol. 92, March.
Malle, S. (1989), *Sistemi economici comparati* (*A Comparison of Economic Systems*), Giappichelli, Turin.
Malrieu, J.P. (1973), *In nome della necessità* (*In the Name of Necessity*), vol. I, ed. Thelema, Rome.
Mandel, E. (1962), *Marxist Economic Theory*, Monthly Review Press, New York.
Manne, A. (1952), 'Multiple-Purpose Public Enterprises: Criteria for Pricing', *Economica*, vol. 19, August.
Marchionatti, R. (ed.) (1978), *Il dibattito economico d'oggi* (The present-day economic debate), Loescher, Turin.
Marginson, P. (1993), 'Power and Efficiency in the Firm: Understanding the Employment Relationship', in Pitelis (ed.) (1993).
Marglin, S. (1974), 'What Do Bosses Do?', *Review of Radical Political Economics*, vol.VI, no. 2, Summer.
Markus, G. (1966), *Marxismo e antropologia* (*Marxism and Anthropology*), Ital. transl. from the Hungarian, Liguori, Naples, 1978.
Marshall, A. (1873), 'The Future of the Working Classes', reprinted in Marshall (1925).
Marshall, A. (1889), 'Co-operation', reprinted in Marshall (1925).
Marshall, A. (1890), *Principles of Economics*, 9th edn, Macmillan, London, 1961.
Marshall, A. (1897), 'The Old Generation of Economists and the New', reprinted in Marshall (1925).
Marshall, A. (1907), 'Social Possibilities of Economic Chivalry', reprinted in Marshall (1925).
Marshall, A. (1923), *Industry and Trade*, 4th edn, Macmillan, London.
Marshall, A. (1925), *Memorials of Alfred Marshall*, ed. by A.C. Pigou, Macmillan, London.
Martin, R.E. (1992), 'The Endowment Funding of Public Input in a Socialist Economy', in Jones and Svejnar (eds) (1992).
Marx, K. (1844), *Economic and Philosophical Manuscripts*, Eng. transl. in Marx (1971).
Marx, K. (1845), 'Theses on Feuerbach', reprinted in Marx (1977).

Marx, K. (1847), *Misère de la philosophie. Réponse à la philosophie de la misère de M. Proudhon* (*The Poverty of Philosophy. An Answer to Mr. Proudhon's Philosophy of Poverty*), Giard & Brière, Paris.
Marx, K. (1849), *Lavoro salariato e capitale* (*Wage-labour and Capital*), Ital. transl., Editori Riuniti, Rome, 1960.
Marx, K. (1857), 'Introduction' to Marx (1859).
Marx, K. (1857–58), *Grundrisse: Introduction to the Critique of Political Economy*, Eng. transl., Penguin Books, Harmondsworth, Middlesex, 1973.
Marx, K. (1859), *A Contribution to the Critique of Political Economy*, Eng. transl., Progress Publishers, Moscow, 1970.
Marx, K. (1862–63), *Theories of Surplus-Value*, Eng. transl., Lawrence & Wishart, London, 1972.
Marx, K. (1863–66), *Il Capitale: libro I, capitolo VI inedito* (*Capital: Volume I: The Unpublished 6th Chapter*), Ital. transl., La Nuova Italia, Florence, 1969.
Marx, K. (1864), 'Inaugural Address of the Working Men's International Association', reprinted in Marx and Engels (1969).
Marx, K. (1865), *Wages, Price and Profit*, Eng. transl., republished in Marx and Engels (1969).
Marx, K. (1867), *Capital*, vol. I, Eng. transl., Penguin Books, Harmondsworth, Middlesex, 1976.
Marx, K. (1871), 'Address of the General Council of the International Working Men's Association', reprinted in Marx and Engels (1958).
Marx, K. (1894), *Capital*, vol. III, Eng. transl., Penguin Books, Harmondsworth, Middlesex, 1981.
Marx, K. (1971), *Early Texts*, translated and edited by D. McLellan, Basil Blackwell, Oxford.
Marx, K. (1977), *Early Writings*, Eng. transl., Penguin Books, Harmondsworth, Middlesex.
Marx, K. and Engels, F. (1845–46), *The German Ideology*, ed. by C.J. Arthur, Eng. transl., Lawrence & Wishart, London, 1970.
Marx, K. and Engels, F. (1958), *Selected Works*, Lawrence & Wishart, London.
Marx, K. and Engels, F. (1969), *Selected Works*, vol. II, Eng. transl., Progress Publishers, Moscow.
Marx, K. and Engels, F. (1976), *Collected Works*, vol. 5, Lawrence & Wishart, London.
Marzano, A. (ed.) (1992), *Crisi e ristrutturazione delle imprese a partecipazione statale* (*The Crisis and Restructuring of State-owned Enterprises*), F. Angeli, Milan.
Matteucci, N. (1995), 'L'eredità di Hayek e la cultura italiana' (The Heritage of Hayek and Italian Culture), mimeo.

McCain, R.A. (1977), 'On the Optimum Financial Environment for Worker Cooperatives', *Zeitschrift für Nationalökonomie*, vol. 37, no. 3–4.
McCain, R.A. (1985), 'The Economics of a Labor-Managed Enterprise in the Short Run: An Implicit Contracts Approach', in Jones and Svejnar (eds) (1985a).
McCain, R.A. (1986), 'Comments on Professor Horvat's Essay', *Journal of Comparative Economics*, vol. 10, no. 1.
McCain, R.A. (1992), 'Transaction Costs, Labor Management, and Codetermination', in Jones and Svejnar (eds) (1992).
McCall, J.J. (ed.) (1982), *The Economics of Information and Uncertainty*, Chicago University Press, Chicago.
McCormick, B. (1992), *Hayek and the Keynesian Avalanche*, Harvester Wheatsheaf, New York.
McLeod, W.B. (1991), 'Equity, Efficiency, and Incentives in Cooperative Teams', in Russel and Rus (eds) (1991).
McMillan, J. (1979), 'The Free Rider Problem: A Survey', *Economic Record*, vol. 56, June.
McNally, D. (1993), *Against the Market: Political Economy, Market Socialism, and the Marxist Critique*, Verso, London.
Meade, J.E. (1964), *Efficiency, Equality and the Ownership of Property*, Allen & Unwin, London.
Meade, J.E. (1966), *The Stationary Economy: Principles of Political Economy*, vol. I, Allen & Unwin, London.
Meade, J.E. (1972), 'The Theory of Labour-managed Firms and of Profit Sharing', *Economic Journal*, vol. 82, March, Supplement.
Meade, J.E. (1974), 'Labour-managed Firms in Conditions of Imperfect Competition', *Economic Journal*, vol. 84, December.
Meade, J.E. (1979), 'The Adjustment Processes of Labour Cooperatives with Constant Returns to Scale and Perfect Competition', *Economic Journal*, vol. 89, December.
Meade, J.E. (1980), 'Labour Cooperatives, Participation, and Value-Added Sharing', in Clayre (ed.) (1980).
Meade, J.E. (1989), *Agathotopia: The Economics of Partnership*, Allen & Unwin, London.
Meade, J.E. (1993), *Liberty, Equality and Efficiency: Apologia pro Agathotopia Mea*, Macmillan, Basingstoke.
Medio, A. (1974), 'Neoclassici, neoricardiani e Marx' (Neo-classics, neo-Ricardians and Marx), in Veca (ed.) (1974).
Meijer, W. (ed.) (1995), *New Perspectives on Austrian Economics*, Routledge, London.

Menger, C. (1883), *Investigations into the Method of the Social Sciences with Special Reference to Economics*, Eng. transl., New York University Press, New York, 1985.
Merlino, S. (1898), *L'utopia collettivistica e la crisi del 'socialismo scientifico'* (*The Collectivist Utopia and the Crisis of 'Scientific Socialism'*), Armando Armando, Rome.
Mészàros, J. (1970), *La teoria dell'alienazione in Marx* (*The Theory of Alienation in Marx*), Ital. transl., Editori Riuniti, Rome, 1976.
Miliband, R. (1994), 'The Plausibility of Socialism', *New Left Review*, no. 206, July–August.
Mill, J.S. (1861), *Considerations on Representative Government*, republished by The Colonial Press, New York, 1958.
Mill, J.S. (1871), *Principles of Political Economy*, 3rd edn, University of Toronto Press, Routledge & Kegan Paul, London, 1965.
Miller, D. (1990), *Market, State and Community: Theoretical Foundations of Market Socialism*, Clarendon Economic Press, Oxford.
Miller, D. (1993),'Equality and Market Socialism', in Bardhan and Roemer (eds) (1993a).
Mills, W. (1984), *The New Man of Power*, Oxford University Press, New York.
Mises, L. von (1921), 'Economic Calculation in the Socialist Commonwealth', *Archiv für Sozialwissenschaften und Sozialpolitik*, vol. 47, April, Eng. transl. in Hayek (ed.) (1935a).
Mises, L. von (1932 and 1951), *Socialism; an Economic and Sociological Analysis*, Eng. transl., Yale University Press, New Haven, 1951.
Mises, L. von (1949), *Human Action*, Yale University Press, New Haven.
Mises, L. von (1956), *The Anti-capitalistic Mentality*, Van Nostrand Company, Princeton.
Mitchell, J. (1988), 'Financial Constraints and the Trade-off between Salaries and Savings in Labor-managed Firms', *Journal of Comparative Economics*, vol. 12, no. 3.
Mitchell, J. (1989), 'Credit Rationing, Budget Constraints, and Salaries in Yugoslav Firms', *Journal of Comparative Economics*, vol. 13, no. 2.
Miyazaki, H. (1984), 'On Success and Dissolution of the Labor-managed Firm in the Capitalist Economy', *Journal of Political Economy*, vol. 92, no. 5.
Miyazaki, H. and Neary, H.N. (1983), 'The Illyrian Firm Revisited', *Bell Journal of Economics*, vol. 14, no. 1.
Moene, K.O. (1989), 'Strong Unions or Worker Control?', in Elster and Moene (eds) (1989a).
Moene, K.O. and Wallerstein, M. (1993), 'Unions versus Cooperatives', in Bowles, Gintis and Gustafsson (eds) (1993).

Mondolfo, R. (1909), 'Fuerbach e Marx' (Feuerback and Marx), reprinted in Mondolfo (1968).
Mondolfo, R. (1962), 'La concezione dell'uomo in Marx' (The Conception of Man in Marx), reprinted in Mondolfo (1968).
Mondolfo, R. (1968), *Umanismo di Marx* (*Marx's Humanism*), Einaudi, Turin.
Montebugnoli, A. (1985), 'Al di là di occupazione e benessere' (Beyond Employment and Welfare), *La Rivista Trimestrale*, no. 2.
Montesano, A. (1974), 'The Logical Consistency of the Aggregate Neoclassical Analysis of Production', Rendiconti del Comitato Veneto per il potenziamento degli studi economici e per la programmazione (Reports of the Venetian Committee for the Development of Economic Studies and Planning), Treviso.
Moravick, I. (1965), 'The Priority of Heavy Industry as an Objective of Soviet Economy', *Soviet Studies*, vol. 17, no. 2.
Morishima, M. and Catephores, G. (1978), *Value, Exploitation and Growth*, McGraw-Hill, London.
Moss, L.S. (ed.) (1976), *The Economies of Ludwig von Mises*, Sheed & Ward, Kansas City.
Moss, L.S. (1994), 'Hayek and the Several Faces of Socialism', in Colonna, Hagemann and Hamouda (eds) (1994).
Mueller, D.C. (1979), *Public Choice*, Cambridge University Press, Cambridge.
Mueller, D.C. (1992), 'The Corporation and the Economist', reprinted in Hausman (ed.) (1994).
Murrell, P. (1983), 'Did the Theory of Market Socialism Answer the Challenge of Ludwig von Mises? A Reinterpretation', *History of Political Economy*, vol. 15, no. 1.
Musu, I. (1977), 'Disequilibrio, rigidità e teoria keynesiana' (Disequilibrium, rigidity and Keynesian theory), *Ricerche Economiche*, vol. 31, no. 1, January–March.
Muzondo, T.R. (1979), 'On the Theory of the Competitive Labor-managed Firm under Price Uncertainty', *Journal of Comparative Economics*, vol. 3, no. 2.
Mygind, N. (1986), 'From the Illyrian Firm to the Reality of Self-Management', in Jansson and Hellmark (eds) (1986).
Mygind, N. (1987), 'Are Self-Managed Firms Efficient? The Experience of Danish Fully and Partially Self-Managed Firms', in Jones and Svejnar (eds) (1987).
Myrdal, G. (1943), *The Political Element in the Development of Economic Theory*, Engl. transl., Routledge & Kegan Paul, London, 1953.
Myrdal, G. (1960), *Beyond the Welfare State*, Duckworth, London.

Napoleoni, C. (ed.) (1956), *Dizionario di economia politica* (*A Dictionary of Political Economy*), Ed. Comunità, Milan.
Napoleoni, C. (1962a), 'Squilibri economici e programmazione in Italia' (Economic Disequilibrium and Planning in Italy), *La Rivista Trimestrale*, no. 2, June.
Napoleoni, C. (1962b), 'Mercato, pianificazione e imprenditività' (Market, Planning and Entrepreneurship), *La Rivista Trimestrale*, no. 3, September.
Napoleoni, C. (1963), *Il pensiero economico del '900* (*Economic Thought in the 20th Century*), Einaudi, Turin.
Napoleoni, C. (1976), *Valore* (*Value*), ISEDI, Milan.
Napoleoni, C. (1985), 'Funzione imprenditoriale, proprietà e capitalismo' (Entrepreneur function, property and capitalism), *La Rivista Trimestrale*, n.s., no. 3.
Negishi, T. (1962),'The Stability of a Competitive Economy: A Survey Article', *Econometrica*, vol. 29, October.
Nell, E.J. (1967), 'Theories of Growth and Theories of Value', *Economic Development and Cultural Change*, vol. 16, October.
Nelson, R.R. (1981), 'Assessing Private Enterprise: An Exegesis of Tangled Doctrine', *Bell Journal of Economics*, vol. 12, no. 1.
Neuhaus, R.J. (1992), *Doing Well and Doing Good. The Challenge to the Christian Capitalist*, Free Press, New York.
Nobay, A.R. and Parkin, M. (eds) (1975), *Contemporary Issues in Economics*, Manchester University Press, Manchester.
North, D. (1990), *Institutions, Institutional Change and Economic Performance*, Cambridge University Press, Cambridge.
Novak, M. (1982), *The Spirit of Democratic Capitalism*, Simon & Schuster, New York.
Novak, M. (1993), *The Catholic Ethic and the Spirit of Capitalism*, Free Press, New York.
Nove, A. (1970), 'Economic Reforms in USSR and Hungary: A Study in Contrasts', reprinted in Nove and Nuti (eds) (1972).
Nove, A. (1972), 'Market Socialism and its Critics', *Soviet Studies*, vol. 24, no. 1, July.
Nove, A. (1983), *The Economics of Feasible Socialism*, Allen & Unwin, London.
Nove, A. and Nuti, D.M. (eds) (1972), *Socialist Economics*, Penguin Books, Harmondsworth.
Nove, A. and Thatcher, I.D. (eds) (1994), *Markets and Socialism*, Edward Elgar, Aldershot.
Nozick, R. (1974), *Anarchy, State and Utopia*, Basil Blackwell, Oxford.
Nussbaumer, A. (1959), 'Zur Frage der Wirtschaftsrechnung in der Zentralverwaltungswirtschaft' (On the Problem of Economic Calculation in a Centrally-managed Economy), *Zeitschrift für Nationalökonomie*, vol. 19, no. 3.

Nuti, D.M. (1978), 'Investment, Interest and Degree of Centralisation in Maurice Dobb's Theory of Socialist Economy', *Cambridge Journal of Economics*, vol. 3, no. 2.
Nuti, D.M. (1986), 'L'economia della compartecipazione: critiche al modello di Weitzman' (The Economics of Profit-sharing: Criticisms of Weitzman's Model), *Politica ed Economia*, vol. 17, January.
Nuti, D.M. (1988), 'Codeterminazione, partecipazione agli utili e cooperazione' (Co-determination, Profit-sharing and Cooperation), in Jossa (ed.) (1988c).
Nuti, D.M. (1992a), 'Market Socialism: The Model that Might Have Been – But Never Was', in Åslund (ed.) (1992).
Nuti, D.M. (1992b), 'On Traditional Cooperatives and James Meade's Labor-Capital Discriminating Partnership', in Jones and Svejnar (eds) (1992).
Nutzinger, H.G. (1975), 'Investment and Financing in a Labour-managed Firm and its Social Implications', *Economic Analysis and Workers' Management*, vol. 9, no. 3–4.
Oakeshott, R. (1975), 'Mondragon: Spain's Oasis of Democracy', in Vanek (ed.) (1975).
Oakeshott, R. (1978), *The Case for Workers' Co-ops*, Routledge & Kegan Paul, London.
Oakeshott, R. (1982), 'Spain: The Mondragon Enterprises', in Stephen (ed.) (1982).
O'Donnell, R.M. (1989), *Keynes: Philosophy, Economics and Politics*, Macmillan, London.
O'Donnell, R.M. (1991), 'Keynes's Political Philosophy', in Barber (ed.) (1991).
O'Donnell, R.M. (1992), 'Unwritten Books and Papers of J.M. Keynes', *History of Political Economy*, vol. 24, no. 4.
Ohyama, M. (1972), 'On the Stability of a Generalized Metzlerian System', *Review of Economic Studies*, vol. 39, April.
Olson, M. (1965), *The Logic of Collective Action*, Harvard University Press, Cambridge, Mass.
Owen, R. (1816), *A New View of Society*, reprinted by August M. Kelley, Clifton, 1972.
Pagano, U. (1978), 'Alcune considerazioni su "Lavoro e capitale monopolistico" di H. Braverman' (A Few Considerations on H. Braverman's 'Labour and Monopolistic Capital'), *Quaderni Piacentini*, December.
Pagano, U. (1985), *Work and Welfare in Economic Theory*, Basil Blackwell, Oxford.

Pagano, U. (1991), 'Property Rights, Asset Specificity, and the Division of Labour under Alternative Capitalist Relations', *Cambridge Journal of Economics*, vol. 15, no. 3.

Pagano, U. (1992a), 'Organizational Equilibria and Production Efficiency', *Metroeconomica*, no. 1–2, February–June.

Pagano, U. (1992b), 'Democrazia economica e diritti di proprietà' (Economic Democracy and Property Rights), *Politica ed economia*, vol. 23, September.

Pantaleoni, M. (1898), 'Esame critico dei principi teorici della cooperazione' (A Critical Review of the Theoretical Principles of Cooperation), *Giornale degli Economisti*, vol. 16, April–May, reprinted in Pantaleoni (1925), vol. II.

Pantaleoni, M. (1925), *Erotemi di economia* (*Issues in Economics*), reprinted by Cedam, Padova, 1964.

Papandreu, A. (1972), *Paternalistic Capitalism*, University of Minnesota Press, University of Minnesota.

Pareto, V. (1897), *Corso d'economia politica* (*A Course in Political Economy*), Ital. transl., Einaudi, Turin, 1949.

Pareto, V. (1927), *Manuel d'économie politique* (*A Political Economy Manual*), 2nd edn, Giard & Brière, Paris.

Parkin, M. and Nobay, A.K. (eds) (1975), *Current Economic Problems*, Cambridge Economic Press, Cambridge.

Parrinello, S. (1977), 'Note sulla nozione di equilibrio nell'economia politica' (Notes on the Notion of Equilibrium in Political Economy), *Giornale degli economisti*, vol. 36, no.1–2, January–February.

Pasinetti, L. (ed.) (1989), *Aspetti controversi della teoria del valore* (*Controversial Issues in Value Theory*), Il Mulino, Bologna.

Paul, E.F., Miller, F.D. and Paul, J. (eds) (1993), *Liberalism and Economic Order*, Cambridge University Press, Cambridge.

Pejovich, S. (1969), 'The Firm, Monetary Policy and Property Rights in a Planned Economy', *Western Economic Journal*, vol. 7, no. 3.

Pelikan, J. (1977), 'Il socialismo e l'Europa orientale' (Socialism and Eastern Europe), in ARA (1977).

Pellicani, L. (1976), 'Socialismo e autogestione' (Socialism and Labour Management), *Mondoperaio*, December.

Pellicani, L. (1977), 'Socialismo ed economia di mercato' (Socialism and Market Economics), *Mondoperaio*, June.

Persky, J. (1989), 'Adam Smith's Invisible Hand', *Journal of Economic Perspectives*, vol.5, no. 1.

Pesciarelli, E. (1981), *Un nuovo modo di produrre: la cooperazione nel pensiero degli economisti classici da Smith a Cairnes* (*A New Manufacturing Mode: Cooperation in the Thought of Classical Economists from Smith to Cairnes*), Editrice CLUA, Ancona.

Peston, M.H. (1959), 'On the Sales Maximization Hypothesis', *Economica*, vol. 26, May.

Peterson, J.H. (1970), 'Some Further Comments on Drewnowski's Economic Theory of Socialism', *Journal of Political Economy*, vol. 78, no. 2, March–April.

Petri, F. (1989a), *Teorie del valore e della distribuzione* (*Theories of Value and Distribution*), La Nuova Italia Scientifica, Florence.

Petri, F. (1989b), 'Lo sfruttamento nel capitalismo e nel socialismo' (Exploitation in Capitalism and Socialism), in Jossa (ed.) (1989a).

Pheby, J. (ed.) (1989), *New Directions in Post-Keynesian Economics*, Edward Elgar, Aldershot.

Pierson, N.G. (1902), 'The Problem of Value in the Socialist State', reprinted in Hayek (ed.) (1935a).

Pigou, A.C. (1928), *The Economics of Welfare*, 4th edn, Macmillan, London, 1960.

Pigou, A.C. (1953), *Alfred Marshall and Current Thought*, Macmillan, London.

Pitelis, C. (ed.) (1993), *Transaction Costs, Markets and Hierarchies*, Blackwell, Oxford.

Plant, R. (1989), 'Socialism, Markets, and End States', in Le Grand and Estrin (eds) (1989).

Polanyi, K. (1944), *The Great Transformation*, Holt, Rinehart & Winston, New York.

Potestio, P. (1986), 'Una nota sul modello di economia partecipativa di M. Weitzman' (A Note on the Participative Economic Model of M. Weitzman), *Politica ed Economia*, vol. 17, December.

Potter, B., 1890, *The Cooperative Movement in Great Britain*, Allen & Unwin, London.

Prasnikar, J. (1980), 'The Yugoslav Self-managed Firm and its Behavior', *Economic Analysis and Worker Management*, vol. 14.

Prescott, E.C. and Townsend, R.M. (1984), 'Pareto Optima and Competitive Equilibria with Adverse Selection and Moral Hazard', *Econometrica*, vol. 52, no. 1, January.

Przeworski, A. (1985), *Capitalism and Social Democracy*, Cambridge University Press, Cambridge.

Pugh, D.S. (ed.) (1971), *Organization Theory*, Penguin Books, New York.

Putterman, L. (1982), 'Some Behavioural Perspectives on the Dominance of Hierarchical over Democratic Form of Enterprise', *Journal of Economic Behaviour and Organization*, vol. III.

Putterman, L. (1984), 'On Some Explanations of Why Capital Hires Labor', *Economic Inquiry*, vol. 22, no. 2, April.

Putterman, L. (1993a), 'Incentive. Problems Favoring Noncentralized Investment Fund Ownership', in Bardhan and Roemer (eds) (1993a).

Putterman, L. (1993b), 'After the Employment Relation: Problems on the Road to Industrial Democracy', in Bowles, Gintis and Gustafsson (eds) (1993).
Radner, R. (1992), 'Hierarchy: The Economics of Managing', *Journal of Economic Literature*, vol. XXX, no. 3, September.
Radomysler, A. (1946), 'Welfare Economics and Economic Policy', *Economica*, vol. 13, August.
Raffaelli, T. (1994), 'Dalla teoria delle passioni al nuovo ordine: mercato e capitalismo in Adam Smith' (From the Theory of Passions to the New Order: Market and Capitalism in Adam Smith), *Moneta e Credito*, no. 186, June.
Rasmusen, E. (1987), 'Moral Hazard in Risk-averse Teams', *Rand Journal of Economics*, vol. 18, no. 3, Autumn.
Rawls, J. (1971), *A Theory of Justice*, Oxford University Press, Oxford.
Rawls, J. (1993), *Political Liberalism*, Columbia University Press.
Reich, M. and Devine, J. (1981), 'The Microeconomics of Conflict and Hierarchy in Capitalist Production', *Review of Radical Political Economics*, vol. 13, no. 2.
Ricci, A.G. (1971), 'Introduzione' (Introduction), in Kautsky (1971).
Ricossa, S. (1989), 'Socialismo, liberalismo e liberismo' (Socialism, Political Liberalism and Economic Liberalism), in Jossa (ed.) (1989a).
Riesman, D. (1990), *Alfred Marshall's Mission*, St. Martin's, New York.
Robbins, L. (1935a), *The Great Depression*, Books for Libraries Press, New York.
Robbins, L. (1935b), *An Essay on the Nature Significance of Economic Science*, Macmillan, London.
Roberts, P.C. (1971), 'Oskar Lange's Theory of Socialist Planning', *Journal of Political Economy*, vol. 79, May–June.
Robertson, D.H. and Dennison, S.R. (1924), *The Control of Industry*, Cambridge University Press, Cambridge.
Robinson, J. (1967), 'The Soviet Collective Farm as a Producer Cooperative: Comment', *American Economic Review*, vol. 57, no. 1.
Robinson, J. and Eatwell, J. (1973), *An Introduction to Modern Economics*, rev. edn, McGraw-Hill, London.
Roemer, J.E. (1982a), 'Exploitation, Alternatives and Socialism', *Economic Journal*, vol. 92, March.
Roemer, J.E. (1982b), *A General Theory of Exploitation and Class*, Harvard University Press, Cambridge, Mass.
Roemer, J.E. (1993), 'Can there be Socialism after Communism?', in Bardhan and Roemer (eds) (1993a).
Roemer, J.E. (1994), *A Future for Socialism*, Harward Business Press, Cambridge, Mass..

Roemer, J.E. and Silvestre, J. (1993), 'Investment Policy and Market Socialism', in Bardhan and Roemer (eds) (1993a).
Roland, G. and Sekkat, K. (1993), 'Market Socialism and the Managerial Labor Market', in Bardhan and Roemer (eds) (1993a).
Romani, F. (1992), 'Appunti per una teoria economica dell'impresa a partecipazione statale' (Notes for an Economic Theory of the State-owned Firm), in Marzano (ed.) (1992).
Roncaglia, A. (1975), *Sraffa e la teoria dei prezzi* (*Sraffa and Theory of Prices*), Laterza, Bari.
Rooney, P.M. (1995), 'Employee Ownership and Worker Participation: Effects on Absenteeism and Quit Rates', in Jones and Svejnar (eds) (1995).
Rosanvallon, P. (1976), *L'età dell'autogestione* (*The Age of Self-management*), Ital. transl. from the French, Marsilio, Padova, 1978.
Rosdolsky, R. (1955 and 1968), *The Making of Marx's 'Capital'*, Eng. transl., Pluto Press, London, 1977.
Rosen, S. (1985), 'Implicit Contracts: A Survey', *Journal of Economic Literature*, vol. 23, September.
Rosner, M. and Putterman, L. (1991), 'Factors Behind the Supply and Demand for Nonalienating Work and Some International Illustrations', *Journal of Economic Studies*, vol. 18, no. 1.
Rossi, E. (1965), *Critica delle costituzioni economiche* (*A Critique of Economic Constitutions*), Edizioni di Comunità, Milan.
Rothbard, M.P. (1976), 'Ludwig von Mises and Economic Calculation under Socialism', in Moss (ed.) (1976).
Rotheim, R.J. (1981), 'Keynes' Monetary Theory of Value (1933)', *Journal of Post-Keynesian Economics*, vol. 3, no. 4, Summer.
Ruffolo, G. (1977), 'Socialismo di mercato e mercato socialista' (Market Socialism and Socialist Market), *Mondoperaio*, October.
Ruffolo, G. (1978a), 'Per un approccio scientifico alla democrazia socialista' (For a Scientific Approach to Socialist Democracy), *Mondoperaio*, October.
Ruffolo, G. (1978b), 'Democrazia industriale e riforma dell'impresa' (Industrial Democracy and the Reform of the Firm), *Mondoperaio*, July–August.
Rullani, E. (1988), 'Evoluzione delle forme di impresa e condizioni per l'innovazione tecnologica: un percorso parallelo dell'impresa cooperativa e di quella capitalistica' (The Evolution of Forms of Enterprise and the Prerequisites of Technological Innovation: A Parallel Progress of Cooperative and Capitalistic Firms), in CESPE (1988).
Russel, R. (1985), *Sharing Ownership in Workplace*, State University of York, Albany.
Russel, R. and Russel, V. (eds) (1991), *International Handbook of Participation in Organizations*, Oxford University Press, Oxford.

Russell, B. (1931), *Philosophical Essays*, revised edn, Simon & Schuster, London 1966.

Rymes, T.K. (1989), *Keynes's Lectures 1932–35*, Macmillan, London.

Sabattini, G. (1972), *Il fallimento del mercato: dal capitalismo al socialismo* (*The Failure of the Market: From Capitalism to Socialism*), Università di Cagliari, Cagliari.

Saint-Exupery, A. (1948), *Cittadella*, Ital. transl., Borla, Turin, 1965.

Salituro, B. (1985), 'La teoria dei contratti impliciti, la rigidità salariale e la disoccupazione involontaria: una sintesi dei risultati' (The Theory of Implicit Contracts, Wage Rigidity and Involuntary Unemployment: A Synthetic Overview of Results), *Economia politica*, vol. 4, no. 1, April.

Salop, S.C. (1979), 'Strategic Entry Deterrence', *American Economic Review*, vol. 69, no. 2, May.

Salvati, M. (1989), 'I principi e l'efficienza' (Principles and Efficiency), in Martinelli, Salvati and Veca (eds) (1989).

Samuels, W.J. (1992), *Essays on the Economic Role of Government*, Macmillan, London.

Samuelson, P.A. (1949), 'Market Mechanism and Maximization', Santa Monica, California, reprinted in Samuelson (1966).

Samuelson, P.A. (1957), 'Wages and Interest: A Modern Dissection of Marxian Economic Models', *American Economic Review*, vol. 47, no. 6, December.

Samuelson, P.A. (1966), *Collected Scientific Papers of Paul A. Samuelson*, ed. by J.E. Stiglitz, MIT Press, Cambridge, Mass.

Samuelson, P.A. (1983), 'Marx, Keynes and Schumpeter', *Eastern Economic Journal*, vol. 9.

Schaff, A. and Sève, L. (1975), *Marxismo e umanesimo* (*Marxism and Humanism*), Ital. transl. from the French and German, Dedalo libri, Bari.

Schleifer, A. and Vishny, R.W. (1994), 'The Politics of Market Socialism', *Journal of Economic Perspectives*, vol. 8, no. 2, Spring.

Schlicht, E. and von Weizsäcker, C.C. (1977), 'Risk Financing in Labour-Managed Economies: The Commitment Problem', *Zeitschrift für die Gesamte Staatswissenschaft*, Special Issue, vol. 133.

Schumpeter, J.A. (1942), *Capitalism, Socialism and Democracy*, Unwin Paperbacks, London, 1987.

Schwartz, A. (1983), *The Implicit Contract Model and Labor Markets: A Critique*, Hebrew University, Tel Aviv.

Schweikart, D. (1993), *Against Capitalism*, Cambridge University Press, Cambridge.

Scitowsky, T. (1943), 'A Note on Profit Maximization and its Implications', *Review of Economic Studies*, vol. 11, no. 1.

Screpanti, E. (1990), *Teorie della distribuzione del reddito* (*Theories of Income Distribution*), 2nd edn, Etas Libri, Milan.

Screpanti, E. and Zamagni, S. (1989), *Profilo di storia del pensiero economico* (*An Outline of the History of Economic Thought*), La Nuova Italia Scientifica, Florence.

Seligman, B.B. (1962), *Main Currents in Modern Economics*, The Free Press of Glencoe, New York.

Sen, A.K. (1966), 'Labour Allocation in a Cooperative Enterprise', *Review of Economic Studies*, vol. 33, October.

Sen, A.K. (1975), 'The Concept of Efficiency', in Nobay and Parkin (eds) (1975).

Sen, A.K. (1983), 'The Profit Motive', *Lloyds Bank Review*, no.147, January.

Sen, A.K. and Williams, B. (eds) (1982), *Utilitarianism and Beyond*, Cambridge University Press, Cambridge.

Sertel, M.R. (1982), *Workers and Incentives*, North-Holland, Amsterdam.

Sertel, M.R. (1987), 'Workers' Enterprises are not Perverse', *European Economic Review*, vol. 31, no. 8.

Settembrini, D. (1996), *C'è un futuro per il socialismo? E quale?* (*Is There a Future for Socialism? And What future?*), Laterza, Bari.

Shackle, G.L.S. (1989), 'What Did the "General Theory" Do?', in Pheby (ed.) (1989).

Shapiro, C. and Stiglitz, J. (1984), 'Equilibrium Unemployment as a Worker Discipline Device', *American Economic Review*, vol. 74, no. 3.

Shell, K. and Stiglitz, J.E. (1967), 'Allocation of Investment in a Dynamic Economy', *Quarterly Journal of Economics*, vol. 81, November.

Sik, O. (1974), 'Il problema della riforma economica nei paesi dell'Est' (The Issue of Economic Reform in Eastern Countries), in Aa.Vv. (1974b).

Sikes, E.R. (1940), *Contemporary Economic Systems: Their Analysis and Historical Background*, New York.

Simmel, G. (1908), *Sociologia* (*Sociology*), Ital. transl. from the German, Ed. Comunità, Milan, 1989.

Simon, H.A. (1971), 'Decision Making and Organizational Design', in Pugh (ed.) (1971).

Skidelski, R. (1983), *John Maynard Keynes: Hopes Betrayed, 1883–1920*, Macmillan, London.

Skidelski, R. (1989), 'Keynes and the State', in Helm (ed.) (1989a).

Smith, A. (1776), *The Wealth of Nations*, republished by Dutton & Co., New York, 1929.

Smith, S.C. (1984), 'Does Employment Matter in the Labour-managed Firm? Some Theory and an Empirical Illustration', *Economic Analysis and Workers' Management*, vol. 10, no. 4.

Smith, S.C. and Meng-Hua, Ye (1988), 'Dynamic Allocation in a Labor-managed Firm', *Journal of Comparative Economics*, vol. 12, no. 2.

Sombart, W. (1924), *Der moderne Kapitalismus (On Modern Capitalism)*, Dunker & Humbolt, Munich.

Sonnenschein, H. (1973), 'Do Walras' Identity and Continuity Characterize the Class of Community Excess Demand Functions?', *Journal of Economic Theory*, vol. 6, no. 4, August.

Sowell, T. (1987), *A Conflict of Visions: Ideological Origins of Political Struggles*, Quied William Morrow, New York.

Spaventa, L. (1970), 'Significato e portata della critica alla teoria marginalista della distribuzione' (The Meaning and Weight of the Criticisms of Marginalist Distribution Theory), *Giornale degli Economisti*, September–October, reprinted in Aa.Vv. (1974a).

Stanfield, R. (1973), *The Economic Surplus and Neo-Marxism*, Heath, Lexington.

Stauber, L.G. (1987), 'Capitalism and Socialism: Some General Issues and the Relevance of Austrian Experience', reprinted in Nove and Thatcher (eds) (1994).

Steele, G.R. (1993), *The Economics of Friedrich Hayek*, Macmillan, London.

Steinherr, A. and Peer, H. (1975), 'Worker-management and the Modern Industrial Enterprise – A Note', *Quarterly Journal of Economics*, vol. 89, no. 4.

Steinherr, A. and Thisse, J.F. (1979a), 'Are Labour-managers Really Perverse?', *Economic Letters*, vol. 2.

Steinherr, A. and Thisse, J.F. (1979b), 'Is there a Negatively-sloped Supply Curve in the Labour-managed Firm?', *Economic Analysis and Workers' Management*, vol. 13, no. 1.

Stephen, F.H. (1978), 'Bank Credit and Investment of the Yugoslav Firm', *Economic Analysis and Workers' Management*, vol. 12, no. 2.

Stephen, F.H. (1979), 'Property Rights and the Labour-managed Firm in the Long Run', *Economic Analysis and Workers' Management*, vol. 13, no. 1.

Stephen, F.H. (1980), 'Bank Credit and the Labor-managed Firm: Comment', *American Economic Review*, vol. 70, no. 4.

Stephen, F.H. (ed.) (1982), *The Performance of Labour Managed Firms*, Macmillan, London.

Stephen, F.H. (1984), *The Economic Analysis of Producers' Cooperatives*, Macmillan, London.

Sterpi, S. (1974), *Lo sviluppo dell'analisi costi-benefici e la crisi dei valori del libero mercato (The Progress of Cost–benefit Analysis and the Crisis in Free-market Values)*, Giuffré, Milan.

Stiglitz, J.E. (1972a), 'On the Optimality of the Stock Market Allocation of Investment', *Quarterly Journal of Economics*, vol. 86, no. 1.

Stiglitz, J.E. (1972b), 'Some Aspects of the Pure Theory of Corporate Finance: Bankruptcies and Take-Overs', *Bell Journal of Economics*, vol. 3, no. 2.

Stiglitz, J.E. (1975), 'Information and Economic Analysis', in Parkin and Nobay (eds) (1975).

Stiglitz, J.E. (1985), 'Credit Markets and the Control of Capital', *Journal of Money, Credit and Banking*, vol. 17, May.

Stiglitz, J.E. (1993), 'Market Socialism and Neoclassical Economics', in Bardhan and Roemer (eds) (1993a).

Stiglitz, J.E. (1994), *Whither Socialism?*, MIT Press, Cambridge Mass.

Stiglitz, J.E. et al. (1989), *The Economic Role of the State*, Basil Blackwell, Oxford.

Streissler, E.W. (1969), *Roads to Freedom: Essays in Honour of Friedrich A. von Hayek*, Routledge & Kegan Paul, London.

Streissler, E.W. (1994), 'Hayek on Information and Socialism', in Colonna, Hagemann and Hamouda (eds) (1994).

Sylos Labini, P. (1991), 'Carlo Marx: è tempo di un bilancio' (Karl Marx: The Time for a Final Assessment Has Come), *Il Ponte*, August–September, reprinted in Sylos Labini (ed.) (1994).

Sylos Labini, P. (ed.) (1994), *Carlo Marx: è tempo di un bilancio (Karl Marx: The Time for a Final Assessment Has Come)*, Laterza, Bari.

Sylos Labini, P. (1995), *La crisi italiana (The Italian Crisis)*, Laterza, Bari.

Sweezy, P.M. (1949), *Socialism*, McGraw-Hill, New York.

Sweezy, P.M., (1953a), *The Present as History*, Monthly Review Press, New York.

Sweezy, P.M. (1953b), 'The Illusion of the Managerial Revolution', in Sweezy (ed.) (1953a).

Sweezy, P.M. (1968), 'Cecoslovacchia, capitalismo e socialismo' (Czechoslovakia, capitalism and socialism) , *Monthly Review*, Ital. edn, November.

Sweezy, P.M. (1971), 'On the Theory of Monopoly Capitalism', in Sweezy (ed.) (1972).

Sweezy, P.M. (1972), *Modern Capitalism and Other Essays*, Monthly Review Press, New York.

Sweezy, P.M. (1974), 'Review of M. Dobb, Theories of Value and Distribution since Adam Smith', *Journal of Economic Literature*, vol. 12, June.

Sztyber, W. (1995), 'Early Views on Socialist Economics', in Meijer (ed.) (1995).

Tannenbaum, A., Cook, H. and Lohman, J. (1984), *The Relationship of Employee Ownership to the Technological Adaptiveness and Performance of Companies*, Institute for Social Research, Ann Arbor.

Taylor, F.M. (1929), 'The Guidance of Production in a Socialist State', *American Economic Review*, vol. 19, March, reprinted in Lippincott (ed.) (1938a).

Temkin, G. (1989), 'On the Economic Reforms in Socialist Countries: The Debate on Economic Calculation Revisited', reprinted in Nove and Thatcher (eds) (1994).

Therborn, G. (1974), 'The Economic Theories of Capitalism', *New Left Review*, no. 87–88, September–December.

Thomas, H. and Logan, C. (1992), *Mondragon, an Economic Analysis*, George Allen & Unwin, London.

Thompson, W. (1827), *Labour Rewarded: The Claims of Labour and Capital Conciliated by One of the Idle Classes, or, How to Secure to Labour the Whole Products of its Exertions*, reprinted by August M. Kelley, New York, 1969.

Thordason, B. (1987), 'A Comparison of Worker-Owned Firms and Conventionally Owned Firms in Sweden', in Jones and Svejnar (eds) (1987).

Tisch, K. (1932), *Wirtschaftsrechnung und Verteilung im zentralistisch organisierten sozialistischen Gemeinwesen* (*Economic Calculation and Distribution in Centrally-organized Socialist Communities*), Wuppertal-Eberfeld, Berlin.

Tönnies, F. (1935a), *Gemeinschaft und Gesellschaft* (*Community and Society*), 8th edn, H. Buske, Darmstadt.

Tönnies, F. (1935b), *Comunità e società* (*Community and Society*), 8th edn, Ital. transl. from the German, Edizioni di Comunità, Milan, 1963.

Treves, R. (1963), 'Introduzione' (Introduction) in Tönnies (1935b).

Valli, V. (1974), *Sistemi economici capitalisti e socialisti* (*Capitalistic and Socialist Economic Systems*), Cooperativa editrice Bocconiana, Milan.

Vanek, J. (1970), *The General Theory of Labor-Managed Market Economies*, Cornell University Press, Ithaca, NY.

Vanek, J. (1971a), 'Some Fundamental Considerations on Financing and the Form of Ownership under Labor Management', reprinted in Vanek (1977).

Vanek, J. (1971b), 'The Basic Theory of Financing of Participatory Firms', reprinted in Vanek (1977).

Vanek, J. (ed.) (1975a), *Self-Management: Economic Liberation of Man*, Penguin Books, Harmondsworth.

Vanek, J. (1975b), 'Introduction', in Vanek (1975a).

Vanek, J. (1977), *The Labor Managed Economy: Essays by J. Vanek*, Cornell University Press, Ithaca.

Vanek, J. (ed.) (1987), 'Toward a Just, Efficient, and Fully Democratic Society', in Jones and Svejnar (eds) (1987).

Vaughn, K.I. (1980), 'Economic Calculation under Socialism: The Austrian Contribution', *Economic Inquiry*, vol.18, October.

Vaughn, K.I. (1981), 'Introduction', in Hoff (ed.) (1938).

Vaughn, K.I. (1994), *Austrian Economics in America*, Cambridge University Press, Cambridge.

Veca, S. (ed.) (1974), *Marxismo e critica delle teorie economiche* (*Marxisms and a Criticism of Economic Theories*), Mazzotta, Milan.

Veca, S. (1977), *Saggio sul programma scientifico di Marx* (*An Essay on Marx's Scientific Programme*), Il Saggiatore, Milan.

Vroom, K. (1964), *Work and Motivations*, John Wiley & Sons, New York.

Wallerstein, I. (1994), 'The Agonies of Liberalism: What Hope for Progress?', *New Left Review*, no. 204, March–April.

Ward, B.N. (1958), 'The Firm in Illyria; Market Syndicalism', *American Economic Review*, vol. 48, no. 4, September.

Ward, B.N. (1967), *The Socialist Economy*, Random House, New York.

Webb, S. and Webb, B. (1921), *A Constitution for the Socialist Commonwealth of Great Britain*, Longman, London.

Webb, S. and Webb, B. (1923), *The Decay of Capitalist Civilization*, Allen & Unwin, London.

Weber, M. (1904–05), *Die protestantische Ethik und der Geist des Kapitalismus* (*The Protestant Ethic and the Spirit of Capitalism*), reprinted in Weber (ed.) (1922b).

Weber, M. (1919), *Wissenschaft als Beruf* (*Science as a Profession*), Dunker & Humblot, Berlin.

Weber, M. (1922a), *Wirtschaft und Gesellshaft* (*Economics and Society*), Ed. Winckelmann, Mohr, Tübingen, 1956.

Weber, M. (1922b), *Gesammelte Aufsätze zur Religionssoziology* (*Collected Essays on the Sociology of Religion*), I.C.B. Mohr, Tübingen.

Weisskopf, T.E. (1993), 'A Democratic Enterprise-based Market Socialism', in Bardhan and Roemer (eds) (1993a).

Weitzman, M.L. (1983), 'Some Macroeconomic Implications of Alternative Compensation Systems', *Economic Journal*, vol. 93, October.

Weitzman, M.L. (1985), 'The Simple Macroeconomics of Profit Sharing', *American Economic Review*, vol. 75, December.

Weitzman, M.L. (1986), 'L'economia della compartecipazione: replica a Nuti' (The Economics of Profit-sharing: An Answer to Nuti), *Politica ed Economia*, vol. 17, April.

West, E.G. and McKee, M. (1983), 'De gustibus non est disputandum: The Phenomenon of "Merit Wants" Revisited', *American Economic Review*, vol. 73, no. 5, December.

Whyte, W.F. (1991), 'Learning from Mondragon', in Russel and Rus (eds) (1991).

Wicksell, K. (1911), *Lectures on Political Economy*, Eng. transl., Routledge & Kegan, London, 1934.

Wicksteed, P. (1933), *The Common Sense of Political Economics*, Macmillan, London.

Wieser, F. von (1889), *Natural Value*, Eng. transl., Kelley & Millan, New York, 1956.

Wiles, P.J.D. (1977), *Economic Institutions Compared*, Wiley, New York.

Williamson, O.E. (1971), 'The Vertical Integration of Production: Market Failure Consideration', *American Economic Review*, vol. 61, May.

Williamson, O.E. (1975), *Markets and Hierarchies: Analysis and Anti-trust Implications*, Macmillan, New York.

Williamson, O.E. (1983), 'Credible Commitments: Using Hostages to Support Exchanges', *American Economic Review*, vol. 73, September.

Williamson, O.E. (1985), *The Economic Institutions of Capitalism*, Free Press, New York.

Williamson, O.E. (1986), *Economic Organization: Firms, Market and Policy Control*, Harvester Wheatsheaf, New York.

Williamson, O.E. and Winter S. (eds) (1991), *The Nature of the Firm: Origins, Evolution and Development*, Oxford University Press, New York.

Wiseman, J. (1953), 'Uncertainty, Costs, and Collectivist Economy Planning', *Economica*, vol. 20, May.

Wood, J.C. and Woods, R.N. (eds) (1991), *Friederick A. Hayek: Critical Assessments*, Routledge, London.

Yellen, J.J. (1984), 'Efficiency Models of Unemployment', *American Economic Review*, vol.74, March.

Yunker, J.A. (1992), *Socialism Revised and Modernised*, Praeger, New York.

Zafiris, N. (1980), 'The Possibilities and Limits of Workers' Entrepreneurship in Capitalist Economies', *Economic Analysis and Workers' Management*, vol. 14, no. 3.

Zafiris, N. (1982), 'Appropriability Rules, Capital Maintenance, and the Efficiency of Cooperative Investment', *Journal of Comparative Economics*, vol. 6, no. 1.

Zamagni, S. (ed.) (1991), *Imprese e mercati (Enterprises and Markets)*, Utet, Turin.

Zan, L. (1990), *L'economia dell'impresa cooperativa (The Economics of the Cooperative Firm)*, Utet, Turin.

Zanetti, G. (1979), *Economia delle imprese (The Economics of Firms)*, Il Mulino, Bologna.

Zassenhaus, H. (1934), 'Über die ökonomische Theorie der Planwirtschaft' (The Theory of the Planned Economy), *Zeitschrift für Nationalökonomie*, vol. 5, no. 1.

Zevi, A. (1984), 'Diritti patrimoniali dei soci e comportamento dell'impresa cooperativa di produzione e lavoro nella disciplina vigente e nei progetti di riforma' (The Property Rights of Members and the Behaviour of Producer Cooperatives under the Legislation in Force and in the Relevant Projects for Reform), *Rivista della Cooperazione*, no. 21, October–December.

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